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DOCUMENTS

OF THE

ASSEMBLY OF THE STATE OF NEW-YORK.

UNIV. OF CALIFORNIA

EIGHTY-SIXTH SESSION.—1863.

VOLUME I.—Nos. 1 to 8, Inclusive.

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State of New York.

No. 1.

IN ASSEMBLY,

January 6, 1863.

UNIV. OF CALIFORNIA

LIST OF MEMBERS

OF THE ASSEMBLY, ELECTED NOVEMBER 4, 1862, TO THE LEGISLATURE OF 1863.

County.	District.	Names.
Albany	1	Wm. J. Snyder.
	2	John Cutler.
	3	Henry L. Wait.
	4	Wm. L. Oswald.
Allegany	1	Alvah E. Cruttenden.
	2	Edward D. Loveridge.
Broome	..	Francis B. Smith.
Cattaraugus	1	Andrew L. Allen.
	2	Albert G. Dow.
Cayuga	1	George I. Post.
	2	William P. Robinson.
Chautauqua	1	John Stewart.
	2	Henry C. Lake.
Chemung	..	Charles Hulett.
Chenango	1	Elizur H. Prindle.
	2	Francis B. Fisher.
Clinton	..	George Adgate.
Columbia	1	Peter G. Kisselbrack.
	2	Elias W. Bostwick.
Cortland	..	Henry B. Van Hoeson.
Delaware	1	Robert W. Courtney.
	2	Francis R. Gilbert.
Dutchess	1	Luther S. Dutcher.
	2	Joseph C. Doughty.

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County.	District.	Names.
Erie	1	John W. Murphy.
	2	Horatio Seymour.
	3	Timothy A. Hopkins.
	4	Anson G. Conger.
Essex	..	Palmer E. Havens.
Franklin	..	Albert Andrus.
Fulton and Hamilton	..	Willard J. Heacock.
Genesee	..	Loren Green.
Greene	..	Luke Roe.
Herkimer	1	Griffin Sweet.
	2	Arch. C. McGowan.
Jefferson	1	Charles A. Benjamin.
	2	Levi Miller.
	3	William Dewey.
Kings	1	John Paulding.
	2	Bernard Hughes.
	3	Samuel E. Johnson.
	4	James Darcy.
	5	Theophilus C. Callicot.
	6	Henry C. Boswell.
	7	Charles P. Leslie.
Lewis	..	John Chickering.
Livingston	1	Hamilton E. Smith.
	2	Samuel Skinner.
Madison	1	William H. Brand.
	2	George L. Rouse.
Monroe	1	George E. McGonegal.
	2	Eliphaz Trimmer.
	3	William Brown.
Montgomery	..	Freeman P. Moulton.
New York	1	Cornelius Flynn.
	2	Daniel Leamy.
	3	George L. Loutrel.
	4	William C. Gover.
	5	Henry Rogers.
	6	Julius Korn.
	7	Vincent C. King.
	8	Thomas H. Hill.
	9	D. V. Freeman.
	10	Daniel M. O'Brien.

County.	District.	Names.
New York	11	Thomas A. Ledwith.
	12	Andrew Smith.
	13	Alexander Ward.
	14	Robert C. Hutchings.
	15	Gilbert Dean.
	16	Michael McCann.
	17	Thomas C. Fields.
Niagara	1	Benjamin H. Fletcher.
	2	William Morgan.
Oneida	1	Abram B. Weaver.
	2	Daniel M. Prescott.
	3	Asa S. Sherman.
	4	Isaac McDougall.
Onondaga	1	James M. Munroe.
	2	Elizur Clark.
	3	Joseph Breed.
Ontario	1	Perez H. Field.
	2	Lanson Dewey.
Orange	1	John D. Van Buren.
	2	Charles S. Woodward.
Orleans	..	John Parks.
Oswego	1	Abner C. Mattoon.
	2	Hiram W. Loomis.
	3	Harvey Palmer.
Otsego	1	William Brooks.
	2	Cornelius A. Church.
Putnam	..	Saxton Smith.
Queens	1	Charles T. Duryea.
	2	Henry S. Lott.
Rensselaer	1	James McKeon.
	2	John A. Quackenbush.
	3	Ebenezer S. Strait.
Richmond	..	Theodore Frean.
Rockland	..	James S. Haring.
St. Lawrence	1	Elias P. Townsley.
	2	James Redington.
	3	Abram X. Parker.
Saratoga	1	Ira Bockett.
	2	Nathaniel M. Houghton.
Schenectady	..	John McShea, Jr.

County.	District.	Names.
Schoharie	..	Stephen L. Mayham.
Schuyler	..	Samuel Lawrence.
Seneca	..	James McLean.
Steuben	1	John W. Taggart.
	2	Henry Sherwood.
	3	Horace Bemis.
Suffolk	1	Benjamin F. Wiggins.
	2	John S. Havens.
Sullivan	..	William Gillespie.
Tioga	..	Nathaniel W. Davis.
Tompkins	..	Ezra Cornell.
Ulster	1	Jesse F. Bookstaver.
	2	Jacob Le Fever.
	3	Ebenezer Westbrook.
Warren	..	Newton Aldrich.
Washington	1	Asa C. Tefft.
	2	Ervin Hopkins, Jr.
Wayne	1	Thaddeus W. Collins.
	2	Lemuel Durfee.
Westchester	1	Pierre C. Tallman.
	2	John E. Marshall.
	3	Chauncey M. Depew.
Wyoming	..	Byron Healy.
Yates	..	Guy Shaw.

State of New York.

No. 2.

IN ASSEMBLY,

January 26, 1863.

GOVERNOR'S MESSAGE.

To the Legislature:

We meet under circumstances of unusual solemnity to legislate for the honor, for the interest and for the protection of the people of the State of New York. The oath, which we have taken, to support the Constitution of the United States and the Constitution of the State of New York and to perform our duties with fidelity, has at this time especial significance. It teaches us to look upon each of these constitutions as equally sacred, that each is to be upheld in its respective jurisdiction. At this time, the power of the one is openly defied by armed rebellion, while the other is endangered by the confusion and discord growing out of civil war. This "oath, declaration or test," is not a mere ceremonial; it is a part of the tenure of the offices we hold. Until we have thus solemnly submitted ourselves to the commands of these instruments, giving up our personal views and opinions and pledging ourselves to obey their requirements, we are not permitted to perform any official act.

To uphold the General Government, New York has sent since the outbreak of this war two hundred and twenty thousand soldiers into the field. To organize this vast army, my predecessor, and those acting under his direction in his military staff, have used unwearied labor and shown high capacity. The duties growing out of this service have been greater than those falling upon the officials of other States, and in their performance compare favorably with the conduct of the war on the part of the General Government. While our soldiers are periling their lives to uphold the Constitution and restore the Union, we owe it to them, who have shown an endurance and patriotism unsurpassed in the history of the world, that we emulate their devotion in our field of duty. We are to take care when they come back that their home rights are not impaired, that they shall not find, when they return to the duties of civil life, that the securities of their persons, the sanctity of their homes or the protection of their property have been lost by us, while they were battling for their national interest in a distant field of duty.

I shall deem it my duty to fill all vacancies in official stations in the army by promotion for meritorious services or gallant conduct in the field; this is a measure of justice, as it will give to them the rewards where they have been fairly earned, and will stimulate both officers and men, by a laudable ambition, to excel in patriotic services in an honorable pursuit.

OUR STATE AFFAIRS.

While so many parts of our country are laid waste by war, their towns and cities desolated, their homes destroyed, their citizens slaughtered, and all that makes social happiness, crushed out beneath the tread of armies, we have cause for gratitude that in this State the circle of its munificent public charities is in full and beneficent operation; all forms of infirmities, suffering and want have been relieved. Our schools, academies and colleges are in successful operation: institutions designed to rescue the young and helpless from careers of vice, are still engaged in the prevention of misery and crime. Our prisons, under a liberal system designed to reform as well as punish, still protect our community against convicted criminals. Our courts are open for the security and protection of persons and property. Mechanical and agricultural pursuits are in the main successfully conducted. Our vast internal and foreign commerce has assumed proportions far beyond that of any former period. But for the overshadowing, gloomy cloud of war, and its heavy drafts upon the blood and treasure of our citizens, there could not be found four millions of people in the enjoyment of greater happiness and prosperity.

The continued ample support extended to the great charities of the State, even in the midst of a war which would tax to the utmost the energies of any nation, past or present, is a striking evidence at once of the enlightened benevolence of our people and the greatness of our resources. It is not necessary for me to dwell upon the importance of those truly noble institutions, the New York State Lunatic Asylum, the New York Institution for the Deaf and Dumb, and for the Blind, the State Asylum for Idiots, and the State Inebriate Asylum. They are eminently entitled to the proper patronage of the State. The Orphan Asylums and hospitals of the State should be fostered at a period when each battle deprives many households of their natural protectors, and increases the number of those who may properly claim the support of charity or the care of institutions for the sick and wounded.

I recommend the enactment of a law authorizing the appointment of a member of the medical profession as a Commissioner of Lunacy, whose duty it shall be to examine into the condition of the insane now confined in the alms houses, poor houses, jails and private lunatic asylums. The subject has been strongly urged upon the attention of previous Legislatures by the medical profession, and I am sure the humanity and propriety of the propositions are too manifest to receive any other than your favorable action.

The annual report of the Superintendent of Public Instruction, shows that 829,989 pupils attended school in 1862, being a larger attendance than for any previous year. It will also appear that a greater number of teachers were employed than heretofore, the increase being drawn from the female portion of the community, that a larger sum was paid for teachers' wages, and that the schools were in session for a longer period, in the aggregate, than during any preceding year.

The annual report of the Regents of the University will show that the colleges and academies of the State, notwithstanding the drain of the war on their numbers, have continued in active and vigorous operation. The number of students in attendance has been thirty-five thousand seven hundred and forty-eight, a little more than one thousand less than for the previous year. The means of higher education are more ample, and its character more thorough and elevated than they have ever been.

The Society for the Reformation of Juvenile Delinquents in the city of New York, and the House of Refuge of Western New York, will submit to you their annual reports. I commend these important institutions to your favorable consideration.

It appears from the Report of the Inspectors of State Prisons, that the number of convicts in the prisons on the thirtieth of September last, was two thousand four hundred and ten; the receipts into the treasury for prison earnings during the fiscal year, were one hundred and ninety-one thousand and forty-three dollars and ninety-seven cents; and the payments therefrom, on account of the prisons, were three hundred and eleven thousand, seven hundred and forty-four dollars and eighty-one cents.

The annual report of the Superintendent of the Banking Department, shows that the total amount of outstanding circulation issued by that officer to Banks, Banking Associations, and Individual Bankers on the 30th of September last, was $42,239,836.

Of this amount $34,262,449 was issued to Banking Associations and Individual Bankers, and is secured as follows:

By bonds and mortgages	$4,912,494 47	
New York State stock	19,022,890 10	
Stock of other States	438,466 67	
United States stock	11,899,450 00	
Cash on deposit	103,720 60	
		$36,377,021 84
Held for incorporated banks under special laws		65,289 14
		$36,442,310 98
Aggregate held September 30, 1861		30,279,851 96
Increase of securities in 1862		6,162,459 02
do circulation in 1862		5,633,696 00
do U. S. stock in 1862		6,810,150 00

Decrease in bonds and mortgages in 1862......	$474,308 00
do N. Y. State stock in 1862..........	100,815 82
do Illinois State stocks in 1862.......	36,783 33
Number of banks doing business..............	305
do do closing and insolvent........	53
	358

The Superintendent of the Insurance Department, will exhibit, in his annual report, many facts connected with the important duties administered by him, of interest to the public.

The Commissioners of Emigration report that during the year 1862, seventy-five thousand nine hundred and eighty-two alien emigrants arrived at the port of New York, being an increase of ten thousand four hundred and fifty-three over the previous year. The Commissioners believe that a large immigration, much in excess of the past four years, will shortly commence from all parts of Europe. I recommend to your attention the suggestion contained in their annual report, and especially that with reference to quarantine. The city of New York, and the country at large are too much interested in the improvements of the sanitary condition of the emigrants, and the protection of that port from contagious and infectious diseases, to omit any measures which shall tend to protect it.

I renew the following recommendation of my predecessor:

"A change is obviously necessary in the laws relative to excise so as to ensure their enforcement, especially in regard to licenses. At present, those who pay for licenses practically receive neither privilege or protection therefor."

The maturing principal and the interest on the State debt has been paid in coin. During the past fiscal year the debt of the State was reduced two millions one hundred thousand dollars, by the redemption of that amount of the canal debt.

THE FUNDED DEBT.

The Funded Debt, on the 30th of September last, stood as follows:

Of canal debt	$23,981,610 25
Of General Fund debt	6,505,654 37
Total State debt	$30,487,264 62

By abstaining from further borrowing, and by depositing the usual annual contributions to the credit of the Sinking Funds, the Comptroller estimates that the above debt will be substantially extinguished within twelve years.

Balance in the Treasury, including Canal Fund, October 1, 1861	$3,074,941 85
Receipts from all sources during the fiscal year ending with September 30, 1862	20,840,913 20
	$23,915,855 05
Payments during the same period	18,165,233 86
Balance in Treasury, October 1, 1862	$5,750,621 19

CANAL FUND.

Balance in the Treasury to the credit of the Canal Fund, September 30, 1861		$2,604,621 25
Received, during the fiscal year, from canal tolls, rents of surplus waters and interest on revenues,	$4,854,989 67	
From proceeds of taxes	2,769,623 09	
From other sources	168,881 61	
		7,793,494 37
		$10,398,115 62

Payments during the same periods:

For redemption of stocks	$2,120,000 00	
For interest on stocks	1,429,859 36	
To Canal Commissioners, repair contractors, superintendents, collectors and weighmasters	1,758,621 33	
Miscellaneous objects	509,331 10	
		$5,808,811 79
Leaving a balance to the credit of the Canal Fund on the 30th September, 1862, of		$4,589,303 83

The gross receipts from tolls, for the past season of navigation, was about five million one hundred and eighty thousand dollars. But this sum represents only the amounts paid into the public treasury for the use of the canals. Our citizens who are the carriers between the lakes and the city of New York, as well as those engaged in transportation upon our inland waters, and upon the ocean, derive a still greater advantage from our commerce with the West. The vast extent of our internal carrying trade can be stated only approximately, but may be safely put down at the following figures, for the past year:

Estimated tonnage of canals for 1862	4,900,000	tons
Ascertained tonnage of railroads to Sept. 30th,	6,600,000	"
For a single year	11,500,000	"
Estimated value of property carried on the canals for 1862	$141,000,000	
On the railroads in 1862	159,000,000	
For a single year	$300,000,000	

It may be added that seventy per cent. of the values of railroad and eighty per cent. of canal freights, are moved from west to east. These facts should induce us to give every possible facility to the vast and growing commerce of the Western States, mainly dependent upon them as we are for the immense through traffic which constitutes so large a share of our carrying trade, and forms a most important source of our commercial greatness, affording at the same time one of the many reasons for cultivating the most enduring relationships with that section.

The obstructions in the channel of the Hudson river severely impair the usefulness of our canals. Their increased capacity has led to the building of boats of greater draft than formerly. These are towed through to New York without change of freight; and after the spring freshets it is not unusual for them to get aground in the river after passing through the canals without difficulty. Suitable measures should at once be taken for the removal of these obstacles.

The aggregate valuations of real and personal property of the State for 1862, is $1,449,303,948. This exceeds the previous year by $7,536,515, although the valuations in the cities of New York and Brooklyn were reduced about fifty million dollars.

The State tax of last year was at the rate of four mills and three-fourths on each dollar of the taxable property. According to the estimates of the Comptroller, less than one-half of that rate will be sufficient for the present year, unless some extraordinary appropriations shall be made by the Legislature.

In July last, the President called for three hundred thousand volunteers, and subsequently ordered a draft for an equal additional number. The quota of the State, under both calls, was about one hundred and twenty thousand men. The exigencies of the service demanded that these troops should be raised with the greatest despatch. It was the season of harvest, when labor commanded high prices. The State had so promptly responded to former requisitions of the Government by voluntary offers, that a strong aversion existed in the public mind toward compulsory measures. It was believed that if suitable bounties were offered, a conscription could be avoided. But no payment could be made from the State treasury without legislative authority. To obtain this, an extra session, involving both delay and expense, was necessary. The Commercial Bank of Albany offered to advance the requisite sum for bounties, and to assume the risk of reimbursement by the Legislature at its annual session. Their offer was accepted, and a suitable arrangement at once made. My predecessor immediately issued his proclamation, offering a State bounty of fifty dollars to each private soldier who should thereafter volunteer into the service of the United States. The moneys thus advanced were disbursed by the Paymaster-General of the State. The annual report of the Comptroller will present the details. As the State tax levied under authority of chapter 456 of the Laws of 1862, for the payment to the United States of the direct tax levied by the act of Congress of the preceding August, will not be required, the proceeds will remain in the treasury, and may be appropriately applied to the repayment of the moneys thus advanced. I therefore recommend that a law making the requisite appropriation, and ratifying the action of the Governor in this respect, be passed, and I cheerfully record my approval of the course pursued in respect to this matter. In addition to the bounty offered by the State in various localities large sums were voted as additional premiums to volunteers, and I recommend the passage of suitable laws providing for the collection of these self-imposed obligations.

The population of this State in 1860 was 3,880,735. The number of men returned by the enrolling officers, as liable to military duty, is 764,603. The number between the ages of 18 and 45 returned as exempt from various causes, is 139,198. Since the beginning of the present war the State of New York has sent to the field 222,836. The number from this State now in the field is estimated at 125,000, showing a total waste since the beginning of the war of 97,836, being an annual waste of about 33 per centum of the whole number, equal to 42,000 per year. To fill the quota of this State under the calls, 30,788 more volunteers are required, unless the General Government will give the State credit for the proportional excess sent to the field before July 2, 1862.

I urge your immediate attention to the inequality and injustice of the laws under which it is proposed to draft soldiers for the service of the General Government; during a long period of peace, but little attention has been paid to our military system. For the purposes of a conscription it is entirely defective; it contains none of the provisions which in the European systems mitigate the evils of compulsory military service; it pays no just regard, on one hand, to the evils which it may inflict, while on the other it makes numerous exemptions which are inconsistent with fairness and with the spirit of our Constitution.

That contemplates that all of suitable ages alike shall perform military duty or pay some equivalent. This purpose is fully expressed by the first Constitution of our State :

"It is of the utmost importance to the safety of every State that it should always be in a condition of defence ; and it is the duty of every man who enjoys the protection of society to be prepared and willing to defend it."

The present Constitution has a provision to the same effect. Not only the organic law of our State, but justice demands that every man who enjoys the protection of society should be prepared to defend it. Recent legislation on this subject has departed widely from this principle ; no conditions have been prescribed upon which those who have scruples of conscience should be excused from bearing arms. Exemptions have been multiplied until large classes are not only relieved from military duty, but also from giving any equivalent for such relief. They include numerous officials and other classes who have no claims to exemption beyond those which belong to every citizen engaged in useful pursuits.

These favored classes are usually in a better condition to give an equivalent than the mass of those upon whom these liabilities now fall. There should be no such unjust distinctions ; all male citizens of suitable years, should be equally liable ; if those who are unfit to perform duty are drawn, they should pay such sum as shall be deemed just by suitable tribunals. If they are unable to pay, the amount can be remitted, or like firemen, they might render an equivalent in an equally honorable branch of the public service. If the lot falls on officials, they can procure substitutes or pay such commutations as may be prescribed by law.

It is glaringly unjust to allow those enjoying the honors and profits of official station to go free of all liabilities, while the only son of the widow, or the sole support of the family, may be forced upon a distant and dangerous service. I also commend to your attention such other provisions as exist in European countries to mitigate the evils which a forced conscription involves, and which have been suggested by experience in their long and frequent wars.

The military system adopted at the last session of the Legislature, cannot be perfected in time to meet the probable calls made by the General Government; an attempt to make a draft upon the present enrollment has been found to involve difficulties and danger of the most serious character, and as such draft has therefore been necessarily postponed, this subject demands your immediate attention.

The amounts due to the soldiers of the war of 1812 from the Government of the United States, have been ascertained by the proper Commissioners appointed by the State, to be $877,628. I recommend that some measures be taken to secure the immediate payment of the amounts due to the several claimants.

NATIONAL AFFAIRS.

The Constitution makes it my duty to communicate to you the condition of the State. I cannot do this without speaking of our Union and of the war which afflicts our country, and which also affects the extended commerce of New York; taxes all its pursuits; has taken more than 200,000 men from our workshops and fields; and has carried mourning into the homes of our citizens. The genius of our government, and the interests of our people demand that the aspects of this war should be discussed with entire freedom. Not only is the National life at stake, but every personal, every family, every sacred interest is involved. We must grapple with the great questions of the day; we must confront the dangers of our position. The truths of our financial and military situation must not be kept back. There must be no attempt to put down the full expression of public opinion. It must be known and heeded, to enable government to manage public affairs with success. There is a yearning desire among our people to learn their actual condition. They demand free discussion. This should be conducted in an earnest, thoughtful, patriotic spirit. The solemnity of the occasion, and the sufferings of the war, should reanimate the virtue, the intelligence, and the patriotism of the American people. The decay of these has brought our calamities upon us. There are now no causes for discord that have not always existed in our country, and which were not felt by our Fathers in forming the Union. They had the greatness, the magnanimity and virtue to compromise and adjust them. The value of the Union they then formed has proved to be greater than they hoped.

Yet we became indifferent to it when we were in the full enjoyment of its blessings. We became forgetful of the character and resources of our own countrymen, while we had the full benefit of an untrammeled commerce with all sections of our land. It was when the world was astonished with the power and wealth growing out of our National Union, that sectional prejudices and passions were active in destroying fraternal affections and generous love of our country. While we boasted most of our intelligence, there were those persistently and laboriously engaged, through the press, and in legislative halls, in teaching the people of the North and the South to undervalue and despise each other. Hostile legislation and the division of our churches impaired religious and social intercourse. If the North and the South had understood the power and purposes of each other, our contentions would have been adjusted. This misapprehension, so bloody and terrible in its effects, was systematically and laboriously inculcated.

CAUSES OF THE WAR.

Affrighted at the ruin they have wrought, the authors of our calamities at the North and South insist that this war was caused by an unavoidable contest about slavery. This has been the subject, not the cause of controversy. We are to look for the causes of this war in a pervading disregard of the obligations of laws and constitutions; in disrespect for constituted authorities; and, above all, in the local prejudices which have grown up in two portions of the Atlantic States, the two extremes of our country, whose remote positions have made them less well-informed, and whose interests have made them less considerate, with regard to the condition and character of our whole people, than those living in the great central and western sections of our Union. There is no honest statement of our difficulties which does not teach that our people must reform themselves, as well as the conduct of the government and the policy of our rulers. There is not a calamity we are suffering which was not clearly foretold by our Fathers, as the result of the passions and local prejudices that have grown up during the past fifteen years.

It is not too late to save our country if we will enter upon the sacred duty in the right spirit and in the right way. When we do so, the effect will be seen and felt throughout our land and by the civilized world. We shall then strengthen our Government; we shall weaken the rebellion; we shall unite our people; and the world will recognize our capacity for self-government, when we show that we are capable of self-reform.

RESPECT FOR LAWS AND RULERS.

In the first place we must emulate the conduct of our Fathers, and show obedience to constituted authorities, and respect for legal and constitutional obligations. "The very idea of the power and right of the people to establish Government, presupposes the duty of every individual to obey the established Government.". Yet a spirit of disobedience has sapped the foundations of Municipal, State, and National authority in every part of our land. It is not only the underlying and pervading cause of the war; it is also the immediate occasion of our calamities.

When the leaders of the insurrection at the extreme South say that Free and Slave States cannot exist together in the Union, and when this is echoed from the extreme North by the enemies of our Constitution, both parties say they cannot, simply because they will not, respect the laws and the Constitution. This spirit of disloyalty must be put down. It is inconsistent with all social order and social security; with safety of persons and property.

In order to uphold our Government, it is also necessary that we should show respect to the authority of our rulers. While acting within the limits of their jurisdictions, and representing the interests, the honor, and the dignity of our people, they are entitled to deference. Where it is their right to decide upon measures and policy, it is our duty to obey and to give a ready support to their decisions. This is a vital maxim of liberty. Without this loyalty, no Government can conduct public affairs with success, no people can be safe in the enjoyment of their rights. This duty is peculiarly strong under our system, which gives the people the right at their elections to sit in judgment upon their rulers, to commend or condemn them, to keep them in, or expel them from official stations.

This war should have been averted; but when its floodgates were opened, the Administration could not grasp its dimensions nor control its sweep. Government was borne along by the current, and struggled as it best could with the resistless tide. Few seemed able to comprehend its military or financial problems. Hence we are not to sit in harsh judgment upon errors in conduct or policy. But while we concede all these excuses for mistakes, we are not to adopt errors, nor sanction violations of principle. The same causes which extenuate their faults in judgment, must make us more vigilant to guard against their influences. Unusual dangers demand unusual vigilance.

ECONOMY AND INTEGRITY.

Economy and integrity in the administration of affairs are essential at all times; they are vital in periods of war. If the power of the People to sustain the expenses of war is broken down, it is vain that we have sent our citizens into the field, and that they have shed their blood in unsupported efforts to save our country.

The opportunities which a state of war gives to unprincipled men to prey upon the public treasury, and the difficulty of checking their schemes, must be borne in mind, when we judge the integrity of our rulers. But while these difficulties should shield them from harsh judgment, they are additional reasons for vigilance and caution. It is in the nature of war to create powerful financial and ambitious interests, eager to prolong its duration. It is one of its chief dangers that it builds up an active class who gain power and wealth by the taxation imposed upon the labor and property of the mass of citizens. This organized class use the National treasury to support schemes of plunder or ambition, and the taxes wrung from the people are thus made to prolong the state of war and military government. The power of our rulers to avert these influences must be aided and strengthened by the most ample exposition of financial affairs.

Extravagance and corruption are violations of the faith pledged to the public creditors. The money loaned to the National treasury was not brought forward at a time of peace and confidence, but in a time of doubt and danger. These claims are held by the rich and poor. The amounts owned by corporations represent the interests of women and children, the aged and infirm. The right of our soldiers to demand economy and integrity is of the most sacred character. Never in the history of the world have armies of such numbers been made up of those who voluntarily left prosperous pursuits and happy homes to suffer the dangers and privations of war. When defeat or destruction of life by violence or disease thinned the ranks of our armies, they promptly and freely stepped forward to the rescue of the country's flag. A fearful crime will be done by those who shall suffer National bankruptcy to turn into dust and ashes the pensions and bounties thus gained at the cost of blood and health and exposure. These pensions will, in many cases, be the sole reliance of those thus made incapable of self-support.

It is worse that a government should be overturned by corruption than by violence. A virtuous people will regain their rights if torn from them, but there is no hope for those who suffer corruption to sap and rot away the fabric of their freedom.

LIMITATIONS OF POWER.

There are not only obligations resting upon our people toward our authorities, but under our political system, there are limitations between the departments of the government, and between the State and National Governments, which must be observed to secure the public safety. At this time these warning words of Washington have peculiar significance:

> "It is important, likewise, that the habits of thinking in a free country should inspire caution in those interested with its administration, to confine themselves within their respective constitutional spheres; avoiding in the exercise

of the powers of one department, to encroach upon the other. The spirit of encroachment tends to consolidate the powers of all the departments in one, and thus to create, whatever the form of government, a real despotism. A just estimate of that love of power, and proneness to abuse it, which predominates in the human heart, is sufficient to satisfy us of the truth of this position."

The Legislative, Executive and Judicial Departments are co-ordinate. It is equally treasonable to resist the rightful authority of either. To overthrow the power of either department is revolution. Legislative right, Executive power, and Judicial independence are alike sacred. Disregard for the limits of State and National jurisdictions, and the interference of one department with the duties of another, are not only opposed to the genius and organic structure of our civil government, but they have caused disasters in the conduct of the war.

While the War Department sets aside the authority of the Judiciary, and overrides the laws of States, the Governors of States meet to shape the policy of the General Government, the National Legislature appoints committees to interfere with the military conduct of the war, and Senators combine to dictate the Executive choice of constitutional advisers. The natural results of meddling and intrigue have followed. While our armies have gained victories in fields remote from the Capital, within its influence the heroic valor of our soldiers and the skill of our generals are thwarted and paralyzed.

STATE RIGHTS.

Not only must the National Constitution be held inviolate, but the rights of States must be respected as not less sacred. There are differences of opinion as to the dividing line between State and National jurisdictions, but there can be none as to the existence of such separate jurisdictions, each covering subjects of legislation and jurisprudence essential to the public security and welfare. A consolidated government in this vast country would destroy the essential home-rights and liberties of the people. The sovereignties of the States, except as they are limited by the Constitution, can never be given up. Without them our Government cannot stand. It was made and it can be changed by State agency. This is shown by the following provisions of the instrument itself.

"The ratification of the conventions of nine States shall be sufficient to the establishment of this Constitution between the States so ratifying the same."

Again, three-fourths of the States can add to or take away from the powers of the General Government, by demanding a convention in which amendments can be proposed, which, if ratified by three-fourths of the States, become parts of the Constitution.

While they can thus take away or add to its power, the General Government can in no way touch one right of the States, or invade their jurisdiction.

The obligations which rest upon the States to respect the Constitution, laws and authorities of the General Government, also demand that the General Government shall show equal respect for the rights and constituted authorities of States.

To State legislation and authorities, we look for the good order of society, the security of life and property, the protection of our homes and all that is nearest and dearest to us, in the relations, duties and actions of life. It is dangerous and demoralizing to show contempt for State authorities and laws. It undermines alike the foundations of State and National Government by breaking up the social system. If home laws are not respected, the more general authority will not be regarded.

ARBITRARY ARRESTS.

Our people have, therefore, viewed with alarm, practices and pretensions on the part of officials, which violate every principle of good order, of civil liberty, and of constitutional law. It is claimed that in time of war the President has powers, as Commander-in-chief of our armies, which authorize him to declare martial law, not only within the sphere of hostile movements, where other law cannot be enforced, but also over our whole land. That at his pleasure he can disregard not only the statutes of Congress, but the decisions of the National judiciary. That in loyal States the least intelligent class of officials may be clothed with power not only to act as spies and informers, but, also, without due process of law, to seize and imprison our citizens, and carry them beyond the limits of the State, to hold them in prisons without a hearing or a knowledge of the offences with which they are charged. Not only the passions and prejudices of these inferior agents lead them to acts of tyranny, but their interests are advanced and their positions secured by promoting discontent and discord. Even to ask the aid of counsel has been held to be an offence. It has been well said that "to be arrested for one knows not what; to be confined, no one entitled to ask where; to be tried, no one can say when, by a law nowhere known or established; or to linger out life in a cell without trial, presents a body of tyranny which cannot be enlarged."

The suppression of journals and the imprisonment of persons have been glaringly partisan, allowing to some the utmost licentiousness of criticism, and punishing others for a fair exercise of the right of discussion. Conscious of these gross abuses, an attempt has been made to shield the violators of law and suppress enquiry into their motives and conduct. This attempt will fail. Unconstitutional acts cannot be shielded by unconstitutional laws. Such attempts will not save the guilty, while they will bring a just condemnation upon those who try to pervert the powers of legislation to the purposes of oppression. To justify such action by precedents drawn from the practice of governments where there is no restraint upon legislative power, will be of no avail under our system, which restrains the Government and protects the citizen by written constitutions.

I shall not enquire what rights States in rebellion have forfeited, but I deny that this rebellion can suspend a single right of the citizens of loyal States. I denounce the doctrine that civil war in the South takes away from the loyal North the benefits of one principle of civil liberty.

It is a high crime to abduct a citizen of this State. It is made my duty by the Constitution to see that the laws are enforced. I shall investigate every alleged violation of our statutes, and see that offenders are brought to justice. Sheriffs and district attorneys are admonished that it is their duty to take care that no person within their respective counties is imprisoned, or carried by force beyond their limits, without due process of legal authority. The removal to England of persons charged with offence, away from their friends, their witnesses and means of defence, was one of the acts of tyranny for which we asserted our independence. The abduction of citizens from this State, for offences charged to have been done here, and carrying them many hundreds miles to distant prisons in other States or Territories, is an outrage of the same character upon every principle of right and justice.

The General Government has ample powers to establish courts, to appoint officers to arrest, and commissioners to hear complaints, and to imprison upon reasonable grounds of suspicion. It has a judicial system, in full and undisturbed operation. Its own courts, held at convenient points in this and other loyal States, are open for the hearing of all complaints. If its laws are not ample for the punishment of offences, it is due to the neglect of those in power.

Government is not strengthened by the exercise of doubtful powers, but by a wise and energetic exertion of those which are incontestable. The former course never fails to produce discord, suspicion and distrust, while the latter inspires respect and confidence.

This loyal State, whose laws, whose courts, and whose officers have thus been treated with marked and public contempt, and whose social order and sacred rights have been violated, was at the very time sending forth great armies to protect the National Capital, and to save the national officials from flight or capture. It was while the arms of

New York thus sheltered them against rebellion, that, without consultation with its chief magistrate, a subordinate department at Washington insulted our people and invaded our rights. Against these wrongs and outrages the people of the State of New York, at its late election, solemnly protested.

The submission of our people to these abuses, for a time only, was mistaken at home and abroad for an indifference to their liberties. But it was only in a spirit of respect for our institutions, that they waited until they could express their will in the manner pointed out by our laws. At the late election they vindicated at once their regard for law and their love of liberty. Amidst all the confusion of civil war, they calmly sat in judgment upon the administration, voting against its candidates. Nor was this the only striking proof of respect for the Constitution. The minority, of nearly equal numbers, yielded to this decision without resistance, although the canvass was animated by strong partisan excitements. This calm assertion of rights, and this honorable submission to the verdict of the ballot box, vindicated at once the character of our people and the stability of our institutions. Had the secessionists of the South thus yielded to constitutional decisions, they would have saved themselves and our country from the horrors of this war, and they would have found the same remedy for every wrong and danger.

MARTIAL LAW.

The claim of power under martial law is not only destructive of the right of States, but it overthrows the legislative and judicial departments of the General Government. It asserts for the President more power as the head of the army, than as a representative ruler of the people. This claim has brought discredit upon us in the eyes of the world. It has strengthened the hopes of rebellion. It has weakened the confidence of loyal States: It tends to destroy the value of our Government in the minds of our people. It leads to discord and discontent at the North, while it has united and invigorated the South.

If there is a necessity which justifies that policy, let us openly and honestly say there is a necessity which justifies a revolution. But this pretension is not put forth as a necessity which overleaps for a time all restraints, and which is justified by a great exigency; it is a theory which exalts the military power of the President above his civil and constitutional rights. It asserts that he may, in his discretion, declare war, and then extinguish the State and National Constitutions by drawing the pall of martial law over our vast country.

"Martial law" defines itself to be a law where war is. It limits its own jurisdiction by its very term. But this new and strange doctrine holds that the loyal north lost their constitutional rights when the south rebelled, and all are now governed by a military dictation. Loyalty is thus less secure than rebellion, for it stands without means to resist outrages or to resent tyranny.. Amidst all the horrors that have been enacted under martial law in the history of the world, and amidst all the justifications attempted of its usages, it was never before held that it could be extended over peaceful States. It was never before claimed that the power of a military commander was superior to the powers of government.

More than two centuries since, that bold defender of English liberty, that honest and independent judge, Lord Coke, declared: "Where courts of law are open, martial law cannot be executed," and also that "the power that is above the law, is unfit for the King to ask or us to grant." Are English laws more sacred, or is English liberty more secure than ours?

It was one of the causes set forth in the Declaration of Independence, for renouncing allegiance to the King of England, "that he has affected to render the military independent of, and superior to the civil power." During the struggle for national life, although surrounded by enemies, spies and informers, who upheld the pretensions of the crown, Washington never declared martial law, or claimed the right, under any circumstances, to make the military superior to the civil authority. On the contrary, he was most deferential to the latter. The feeling of the fathers on this subject can best be learned by the Constitutions, which were formed by the men who established our National Government; all of them had provisions inconsistent with this new and monstrous pretension.

Massachusetts, New Hampshire, Connecticut, Delaware, Pennsylvania, Maryland, North Carolina and South Carolina, eight of the twelve States which originally made up our Union, explicitly declared that the military power should, in all cases and at all times, be held in exact subordination to the civil authority, and be governed by it; this was expressed in each Constitution, in terms almost identical. It is incredible that a people who held these views, and who were jealous of their liberties, and who thus restrained State authorities under their immediate control, would give to the commander of the army of the United States this despotic power; a power which the crown of Great Britain has not been permitted to exercise for nearly two centuries.

The measure of power to be exercised under our government is fixed by the Constitution. To make the maxims of other governments or the usages of other nations the rule here, would give sanction to every outrage, tyranny and wrong. It would undo what was done by our fathers who formed our government; it makes the practices of despotism or the principles of monarchy higher authorities than the written Constitution of our Republic. The unlimited, uncontrolled despotic power claimed under martial law is of itself a reason why it cannot be admitted. The fact that it is inconsistent with the purposes, spirit, and genius of our institutions, is conclusive against the claim set up for its control over an extent of country and a diversity of interests which never existed in the despotisms or monarchial governments from which the precedents are drawn to justify it.

New York and other States consented to make up the General Government only upon the assurance that the original Constitution should be so amended as to secure more perfectly the rights of States and citizens. These articles were added by the unanimous vote of the States:

ARTICLE 4.—"*The right of the people to be secure in their persons, houses, papers and effects, against unreasonable searches* *and seizures, shall not be violated. And no warrant shall issue but upon probable causes, supported by oath or affirmation, and particularly describing the place to be searched and the person or thing to be seized.*"

ARTICLE 5.—"*No person shall be held to answer for a capital or otherwise infamous crime, unless on a presentment or indictment of a grand jury, except in cases arising in the land or naval forces, or in the militia, when in actual service in time of war or public danger;* * * * * *nor be deprived of life, liberty or property without due process of law.*"

The want of these restraints in the original instrument endangered its adoption. They were inserted to satisfy the public demand. We are now told that they are of no avail, in any part of our country, when the Executive shall see fit to declare there is war or insurrection in any section of this land.

Such pretensions are in contradiction to the plain language of these clauses, and to their settled legal effect. If any differences of construction be possible, our Constitution provides for their determination. These questions will be carried before the proper judicial tribunals. If the theory of martial law is upheld by them, we will submit, and have the Constitution amended. If it is held to be unfounded, it must be given up.

So sacred did our fathers hold constitutional rights, that they placed them beyond the reach even of the majority of our people. Written constitutions are made not only to carry out the wishes, but also to restrain the power of majorities, and to uphold and protect the rights of minorities. They give the humblest citizen the right of religious freedom against the whole power of our people. No matter how large a majority may be, it must not interfere with rights of persons, of property, or of conscience.

The President himself holds his place not by the will of the majority, but by virtue of the provisions of the Constitution, which placed him in his office by the votes of about 1,800,000, against the votes of about 2,800,000, who did not agree among themselves as to opposing candidates. He continues rightfully to hold his office, although the popular majorities, even in the State which placed him there, have, in the recent elections, declared themselves politically opposed to his administration. The majority are still bound to respect his constitutional rights, to uphold his powers, and to sustain his acts done within the limits of rightful authority.

The rights of States were reserved, and the powers of the General Government were limited, to protect the people in their persons, property and consciences, in times of danger and civil commotion. There is little to fear in periods of peace and prosperity. If we are not protected when there are popular excitements and convulsions, our government is a failure. If Presidential proclamations are above the decisions of the courts and the restraints of the Constitution, then that Constitution is a mockery. If it has not the authority to keep the Executive within its restraints then it cannot retain States within the Union. Those who hold that there is no sanctity in the Constitution, must equally hold that there is no guilt in the rebellion.

We cannot be silent and allow these practices to become precedents. They are as much in violation of our Constitution as the rebellion itself, and more dangerous to our liberties. They hold out to the Executive every temptation of ambition to make and prolong war. They offer despotic power as a price for preventing peace. They are inducements to each administration to produce discord and incite armed resistance to law, by declaring that the condition of war removes all constitutional restraints. They call about the National Capital hordes of unprincipled men, who find in the wreck of their country the opportunity to gratify avarice or ambition, or personal or political resentments. This theory makes the passion and ambition of an administration antagonistic to the interest and happiness of the people. It makes the restoration of peace the abdication of more than regal authority in the hands of those to whom is confided the government of our country.

Of the same nature is the recent proclamation of general emancipation in certain States and districts. The President had already signed an act of Congress, which asserts that the slaves of those in rebellion are confiscate. The sole effect of this proclamation, therefore, is to declare the emancipation of slaves of those who are not in rebellion, and who are therefore, loyal citizens. It is an extraordinary deduction from the alleged war power, that the forfeiture of the right of loyal citizens, and bringing upon them the same punishment imposed upon insurgents, is calculated to advance the success of the war, to uphold the Constitution and restore the Union. The class of loyal citizens who above all others, are entitled to the protection of the Government, are those who, in the region of the civil war, have remained true to the flag of our country. And yet the sole force of this proclamation is directed against them. May not this measure, so clearly impolitic, unjust and unconstitutional, and which is calculated to create so many barriers to the restoration of the Union, be misconstrued by the world as an abandonment of the hope or the purpose of restoring it—a result to which the State of New York is unalterably opposed, and which will be effectually resisted.

We must not only support the Constitution of the United States and maintain the rights of the States, but we must restore our Union as it was before the outbreak of the war. The assertion that this war was the unavoidable result of Slavery is not only erroneous, but it has led to a disastrous policy in its prosecution. The opinion that slavery must be abolished to restore our Union, creates an antagonism between the Free and Slave States which ought not to exist. If it is true that slavery must be abolished by the force of the Federal Government; that the South must be held in military subjection; that four millions of negroes must for many years, be under the direct management of authorities at Washington at the public expense; then, indeed, we must endure the waste of our armies in the field, farther drains upon our population, and still greater burdens of debt. We must convert our government into a military despotism. The mischievous opinion that in this contest the North must subjugate and destroy the South to save our Union, has weakened the hopes of our citizens at home and destroyed confidence in our success abroad.

THE CENTRAL AND WESTERN STATES.

It is a suggestive fact, affording instruction and hope for the future, that the theories which have exercised an evil influence on our National politics, did not originate in what may be called the heart of the Union, among the intimate and well-acquainted populations of the Central and Western States, where the States permitting and forbidding slavery are in actual contact, nor in the portions traversed by the great east and west lines of commerce and intercourse. They have been developed almost entirely in two sections comparatively isolated by position, traditions, and peculiar habits of thought, and least connected with the more homogeneous mass of our people. There have been extreme Northern views and extreme Southern views; but also the broader and more tolerant views of the more populous Central and Western States. These extend on both sides of that indenturing boundary between "slave" and "free" States, which is not a line of opposing opinions, but of intermingling interests. Their plains are interlocked by confluent rivers, and not divided by mountain ranges. These States are a region of harmonizing views and sympathies. They are not only bound together by peculiar interests, but also by strong reasons for resisting a division on that boundary, which would make them frontier States, which would replace their cordial intercourse by hostile relationships, and throw upon them all the greatest and sharpest evils of the separation. Thus, while they do not share the passions and prejudices of those extreme States which strove to enlist them in the contest, they have motives of the highest interest to restore the old order of things, and of the gravest apprehension from a separation. This war blights and destroys the hopes and the happiness of this region, while the sections whose passions and interests kindled it are mainly remote from the terrible suffering it has caused.

The Western and Central States enlisted warmly in a war for the Union and Constitution. The northern tier of "Slave States," (except Eastern Virginia) earnestly supported the Government in its policy while it was consistent with this purpose, which was known as the "Border State policy." Both the administration and Congress then declared their sole purpose to be to restore the Union and maintain the Constitution. When the Administration abandoned this policy, and took up the views of extreme Northern States, it lost, at the late election, nearly all the political support which the Central and Western States afforded in the elections of 1860 and 1861.

While the North cannot hold the Southern States in subjection without destroying the principles of our Government, the great Central and Western States can control the two extremes. They will not accept the views of either as safe guides in the conduct of public affairs. This is shown by the political history of our country during the past four years. When it was believed that the late Administration was controlled by the views of the Gulf States, it lost its power in the Central and Western region. The opposing party, to gain public support, were obliged, by assurances and resolutions, to repel the charge that they would interfere with slavery in the

States, and they denounced, as unjust, the imputation that they held the views of the abolitionists of the extreme northern section. Without these pledges they could not have gained political power.

When the Gulf States seceded, the central Slave States, by large majorities, refused to act with them. They sought to avoid war and division by the peace conference held in Washington. Unfortunately the dominant leaders of the party which had succeeded at the election of 1860, overlooking the fact that this was done by the vote of 1,800,000 against a divided opposition of about 2,800,000, rejected all terms of compromise and conciliation as inconsistent with the results of the election, and attempted to govern and control an agitated and convulsed country strictly by the opinions and sentiments of a minority.

The outbreak of war involved our whole country in its excitements. The States of Delaware, Maryland, Kentucky, and Missouri, and the western part of Virginia, adhered to the Union. The purpose then avowed by the Administration and asserted by Congress, as to the objects of the war, gave to the Administration overwhelming majorities at the election of 1861, in all the loyal States. All engaged hopefully and unitedly in the work of upholding our Constitution and of restoring our Union to its former condition. When this policy was changed, and it adopted the sentiments of the extreme Northern States, and discarded those of the Central and Western States, a remark able political revolution was the result.

EXTREMES WILL NOT PREVAIL.

It has been assumed that this war will end in the ascendancy of the views of one or the other of the extremes of our country. Neither will prevail; for neither can command the support of the majority of the American people. The great Central and Western States, which have the largest share of the population and resources of our country, will not accept of either class of purposes. This is the significance of the late elections. Their determination is to defend the rights of States, and the rights of individuals, and to restore our Union as it was. It will be restored by the Central and Western States, both free and slave, who are exempt from the violent passions which bear control at the extremes. It is a fact full of hope that the prejudices between Northern and Southern States are not held on the line of contact, but in the sections most remote from each other, and separated by the great controlling regions and resources of the country. Those of the Central Slave States which rejected the ordinance of secession, which sought to remain in the Union, and which were driven off by a contemptuous, uncompromising policy, must be brought back. The restoration of the whole Union will then be only the work of time, with such exertion of power as can be put forth without needlessly sacrificing the life and treasure of the North in a bloody and calamitous contest. We must not wear out the lives of our soldiers, nor exhaust the earnings of labor, by a war for uncertain ends, or to carry out vague theories. The policy of subjugation and extermination means, not only the destruction of the lives and property of the South, but also the waste of the blood and treasure of the North.

The exertion of armed power must be accompanied by a firm and conciliatory policy, to restore our Union with the least possible injury to either section.

To make this Union, New York gave up a vast and rightful political power in the Senate. It has proved a greater blessing than the most hopeful expected. To save it we have made great sacrifices of blood and treasure. Is it not also worth a sacrifice of passion? Shall we let it be torn to fragments without one conciliatory effort to preserve it?

ADJUSTMENTS OF INTERESTS, &C.

Those at the north and the south who have been laboring to break down our National Constitution and Union, and to make two confederacies, overlook the fact that in each of these it would be more difficult to adjust conflicting interests, and State representation, than in our existing Union. The vast extent of our country, and its varied productions and pursuits, have relieved antagonism between commercial, manufacturing and agricultural interests. They give to each great fields for prosperous pursuits. If the producing States of the west are cut off from the markets of the south, they will demand a free trade policy which will open to them the markets of the world; and even these will not make good the loss. They will not give up their peculiar advantages of raising grain and cattle for other pursuits, and the markets of the eastern States and Europe are not equal to western productions. The past two years have shown this. With an unusual European call for breadstuffs and provisions, with a vast consumption of these articles by our American armies, there is a great section of the west where the prices do not pay for their production. There is bankruptcy and financial distress in the midst of abundant harvests; and a waste of ungathered grain, at a time of the largest exportation of agricultural products known in the history of our country. Reducing the cost of carrying these products will not cure this trouble. Opening the Mississippi, as a way to the markets of the world, will not overcome this evil.

The cotton raised on the Mississippi is the joint product of the provisions of the North and the labor of the South. The people of the West must have the markets of the Southwestern States to bring back their prosperity. They must be reunited, politically, socially, and commercially, to the valley of the Lower Mississippi. Their grain and provisions must be converted into cotton, and in this form carried profitably to the Eastern and European ports. When they have thus gained the returns for their labor, they will once more become the supporters of our commerce. To restore this great region to its former prosperity, and to regain for ourselves its enriching trade, the lower valley of the Mississippi must be brought back into the Union; it must be brought back too with all its elements of production and wealth unimpaired, with all the advantages of local self-government; not a devastated and ruined territory, under a blighting, debasing military control.

So closely are the upper and the lower valleys of the Mississippi bound together by interest that when cotton is burned in Louisiana, Indian corn is used as fuel in Illinois. The ruin of the Southern consumer brings bankruptcy upon the Northern producer. When the capacity of the one to buy is annihilated, the ability of the other to produce is weakened or destroyed. This single instance, from many equally strong, shows that neither in a Northern or Southern Union can the conflicting interests of agriculture, commerce and manufactures be adjusted.

POLITICAL INTERESTS, &C.

The division of our Union into two or more confederacies would re-open in each those questions of distribution of power and relationship between States, which were settled by our National Constitution. Even now, the centralization of power and patronage at the National Capital causes uneasiness in those States which now are, or will soon become, the most populous. The Senate can prevent the passage or repeal of laws by the House, which represents the popular will, and, at the same time, can control the power of the Executive by rejecting treaties formed or nominations made by the President. At this time, it assumes to dictate the organization of the Executive Department. This body, also, has the advantage of longer tenure of office, while it is farther removed from popular control. It is in this powerful branch of government that States have an equal representation, without regard to population.

Even under our present Union, it is for the interest of the small States to centralize power in the National Government, as they enjoy a disproportionate control in the most influential branch of that government. All now acquiesce in that compromise of the Constitution. It is the best adjustment which can be made between the larger and smaller States.

So long as all the States of our present Union were represented in Congress, this tendency was checked by the existence of States with small populations distributed in different sections of our country, and somewhat equally among the agricultural, commercial, and manufacturing regions. Hitherto, no injurious or irritating results have been caused. A division of the Union, or the disfranchisement of the Southern States by putting them back into the condition of mere territories, or a representation dictated by the military power of Government, would make inevitable a re-adjustment of political power. If the Southern States are cut off or disfranchised, every map of our country will constantly suggest this to the public mind. In the Northern Union, the group of six small New England States, with New Jersey and Delaware lying on the Atlantic coast, far removed from the central and western sections of our country, with united populations only about equal to that of this State, would balance, in the controlling branch of the National Legislature, the great producing States of New York, Pennsylvania, Ohio, Indiana, Illinois, Michigan, Wisconsin and Iowa. In a few years, each of these States will have populations greater than that of all New England. This disparity of political power would be increased by the fact that the population and pursuits of New England, confined within very limited boundaries, have the uniformity of one community, while the larger States have diversified and distinctive pursuits to prevent them from acting so readily in concert.

The danger of controversy would be increased by our vast National debt. This mainly held by a few Atlantic

States, divides our country into the perilous sectional relations of debtor and creditor regions. The ownership of this debt cannot be diffused over our country so that the same communities which pay taxes will receive incomes. The incidental advantages of protective tariffs growing out of this debt, would be largely gained by the creditor States, which also enjoy this disproportionate share of political power. The great producing States would be compelled to pay a heavy taxation to other communities at a time when the division of our Union would deprive them of their most profitable markets; and heavy duties would tend to diminish the demands of foreign countries for their productions. No one can look forward to such agitations and discussions without the deepest concern.

The smaller States, grouped upon the shores of the Atlantic, were all original parties to the Constitution. They are gloriously associated with the history of the Revolutionary struggle. They bear names that are honored, and have memories that are cherished in every part of the land. They must not, through the folly of blind and bigoted leaders, lose the great special political powers which are given to them by the compromises of the Constitution. They must not suffer that instrument, which secures to them peculiar advantages, to be weakened or destroyed.

THE UNION MUST BE RESTORED.

There is but one way to save us from demoralization, discord, and repudiation. Our Union must be restored, complete in all its parts. No section must be disorganized beyond the unavoidable necessities of war. All must be made to feel that the mighty efforts we are making to save our Union are stimulated by a purpose to restore peace, prosperity, and happiness to every section.

The vigor of war will be increased when the public mind and energies are concentrated upon the patriotic, generous purpose to restore our Union for the common good of all sections. It cannot be so united upon any bloody, any barbarous, any revolutionary, or any unconstitutional scheme, looking merely to the gratification of hatred, or purposes of party ambition, or sectional advantage. Every exertion of power, every influence of persuasion, every measure of reconciliation, must be used to restore this Union to its former condition. Let no one demand that the blood of his neighbor shall be shed; that the fruits of the labor of our citizens shall be eaten up by taxation, to gain this end, and then refuse to give up his own passions, or to modify his own opinions, to save our country and to stop the fearful waste we are now making of treasure and of life. Let no one think that the people who have refused to yield this Union to rebellion at the South, will permit its restoration to be prevented by fanaticism at the North.

CONCLUSION.

The pervading sentiment of the great controlling sections of our country will not only save our Union, but it will do so in a way harmonizing with the genius of our institutions, the usages of our people, and the letter and spirit of our Constitution. It will manifest itself in the customary manner by discussion and political action. The framers of our Constitution foreseeing that events would render it necessary for the people of the several States, not only thus to address our Government, but also to produce a concert of purpose and action between different communities, provided in the Constitution, that "Congress shall make no law abridging the freedom of speech, or of the press, or the right of the people peaceably to assemble and to petition the Government for a redress of grievances."

Our present alarming condition naturally calls for such expressions of public opinion with respect to the objects of this war, and the spirit in which it should be conducted, and the end for which it should be waged: when the public will is clearly expressed it must be recognized and respected by Government. It will also make itself effective in our frequently recurring elections which peacefully but rapidly form a body of Government in harmony with its purposes. It will influence congressional action, or it may lead to a convention of the States.

The condition of our country is not hopeless, unless it is made so by passions and prejudices which are inconsistent with the Government of a great country. This war, with all its evils, has taught us great truths, which if accepted by our people will place the future relations of the various sections of our Union on the firmest basis. It has made us know the value of the Union itself not only in our internal but in our foreign relations. It has given us a wisdom and knowledge of each other, which had we possessed earlier, would have averted our present calamities.

If the interest of different sections of our country are conflicting in some respects, they are so balanced and adjusted by nature, that there is an irrepressible tendency to intercourse, harmony and Union. This tendency must, in the end, overcome mutual misapprehension. We have also learned the great mutual strength of the North and of the South, and amid all the bitterness of feeling engendered by the war each section has been taught to respect the power, resources and courage of the other.

We must accept the condition of affairs as they stand. At this moment the fortunes of our country are influenced by the results of battles. Our armies in the field must be supported; all constitutional demands of our General Government must be promptly responded to.

But war alone will not save the Union. The rule of action which is used to put down an ordinary insurrection is not applicable to a wide-spread armed resistance of great communities. It is weakness and folly to shut our eyes to this truth.

Under no circumstances can the division of the Union be conceded. We will put forth every exertion of power; we will use every policy of conciliation; we will hold out every inducement to the people of the South, to return to their allegiance, consistent with honor; we will guaranty them every right, every consideration demanded by the Constitution, and by that fraternal regard which must prevail in a common country; but we can never voluntarily consent to the breaking up of the Union of these States, or the destruction of the Constitution.

Humbly acknowledging our dependence upon Almighty God, and repenting our pride, ingratitude and disobedience, let us pray that our minds may be inspired with the wisdom, the magnanimity, the faith and charity, which will enable us to save our country.

HORATIO SEYMOUR.

ALBANY, *January* 7, 1863.

APPENDIX.

REPORT OF PARDONS granted during the year 1862, (*made in compliance with art.* 4, § 5, *of the Constitution.*)

Date.	Name of convict.	Crime.	Term of sentence.			Date of sentence.	County of	Prison.
			Years.	Months.	Days.			
Jan. 24	Jacob, Leonhard	Grand larceny	2	9	2	June 29, 1859	Erie	Auburn.
do 27	Campbell, George	Burglary and grand larceny	3			April 19, 1860	Yates	Auburn.
Feb. 7	Sterling, David	Assault with dangerous weapons	2			May 14, 1861	New York	Sing Sing.
do 21	Thompson, James	Burglary, 1st degree	10	5		Dec. 21, 1855	Kings	Sing Sing.
do 27	Kain, Edward	Forgery, 3d degree	5			Sept. 29, 1858	Kings	Sing Sing.
March 21	Foley, Martin	Burglary, 2d degree	4			March 17, 1859	Onondaga	Auburn.
do 23	Wilson, John	Forgery, 2d degree	5	2		Feb. 20, 1861	New York	Sing Sing.
do 31	Mulvany, Matthias	Manslaughter, 3d degree	4			July —, 1859	Allegany	Auburn.
April 12	Bergen, Patrick	Rape	15			Oct. 14, 1858	Schenectady	Clinton.
do 15	Ryan, Patrick	Robbery	10			Dec. 7, 1858	Erie	Auburn.
do 22	Barrett, Michael, Jr.	Forgery, 4th degree	2			April 4, 1861	Kings	Sing Sing.
May 13	Dunlop, Henry	Assault and battery	1			Feb. 4, 1862	Rensselaer	Albany Co. Penitentiary.
do 17	Skelly, Patrick	Assault	1			Nov. 19, 1861	Kings	Kings Co. Penitentiary.
June 2	Norris, Garrett C.	Burglary and larceny	2			April 18, 1862	Warren	Clinton.
do 5	Chamberlain, William	Perjury	5			March 26, 1859	Erie	Auburn.
do 24	McManus, Redmond	Manslaughter, 4th degree		6		Dec. 28, 1861	New York	City Prison.
July 5	Suyts, Joseph	Forgery	5			Nov. 22, 1859	Dutchess	Sing Sing.
do 5	Daley, Ellen	Grand larceny	5			Aug. 6, 1859	New York	Sing Sing.
do 9	Nugent, Michael	Robbery	Life.			Jan. 23, 1857	New York	Sing Sing.
do 9	Hyde, George	Robbery	Life.			Jan. 24, 1857	New York	Sing Sing.
do 10	Welch, Mary	Drunk and disorderly		6		April 21, 1862	Rensselaer	Albany Co. Penitentiary.
do 12	Layton, Robert	Grand larceny	4	10		Dec. 18, 1857	New York	Sing Sing.
do 16	Harrington, John	Wilful trespass			100	July 8, 1862	Genesee	Monroe Co. Penitentiary.
do 28	Keye, Henry	Manslaughter	10			April 7, 1858	Niagara	Auburn.
do 28	Kirkland, John	Grand larceny	3	6		Oct. —, 1859	Oneida	Auburn.
do 30	Beglin, James	Burglary, 2d degree	9	6		Nov. 20, 1857	New York	Sing Sing.
do 31	Dougherty, John	Indecent exposure		4		July 11, 1862	New York	New York Penitentiary.
Aug. 1	Cordova, Antonio	Attempt at grand larceny	2	3		Jan. 26, 1861	New York	Clinton.
do 11	Hammer, Henry	Manslaughter, 2d degree	5	3		Feb. 4, 1860	Niagara	Auburn.

REPORT OF PARDONS.—Continued.

Date.		Name of convict.	Crime.	Term of sentence.			Date of sentence.	County of	Prison.
				Years.	Months.	Days.			
Aug.	12	Comstock, Russell	Rape	10	1		March 17, 1860	Allegany	Auburn.
do	20	Bascom, Joseph H	Grand larceny	3	4		Dec. 1859	New York	New York Penitentiary.
do	21	Poole, Thomas	Passing counterfeit money	2			August, 1861	Onondaga	Onondaga Co. do
do	28	Wheaton, Daniel C.	Burglary, 2d degree	5			Oct. 13, 1857	Broome	Auburn.
do	30	Berrigan, Bridget	Petit larceny		3		August 9, 1862	New York	New York Penitentiary.
Sept.	1	Conroy, Robert	Forgery, 4th degree		2		June 24, 1861	Albany	Clinton.
do	5	Wright, Smith	Robbery	10	6		November 1856	Erie	Auburn.
do	10	Riley, Margaret	Petit larceny		6		April 19, 1862	New York	New York Penitentiary.
do	11	Harver, George	Assault with intent to kill	10			Dec. 16, 1857	Albany	Clinton.
do	12	Laflesh, Joseph	Petit larceny, 2d offence	2	3		Feb. 19, 1861	St. Lawrence	do
do	13	Olsen, Seward	Grand larceny	2			April 22, 1862	New York	Sing Sing.
do	13	Mc Guire, William	*Disorderly conduct				August 3, 1862	Rensselaer	Albany Co. Penitentiary.
do	15	Trowbridge, James L.	Burglary 3d degree and larceny	4			June 1, 1859	Oneida	Auburn.
do	22	O'Tool, Patrick	Bigamy	3	6		Oct. 4, 1860	Erie	Auburn.
do	24	Van Dusen, Eugene	Burglary and larceny	3			April 18, 1861	Warren	Clinton.
do	30	More, Ransom	†Assault and battery				Sept. 22, 1862	Schenectady	Albany Co. Penitentiary.
October	1	Ledgwitch, Matthew	Grand larceny	2			Sept. 30, 1861	Albany	Clinton.
do	3	Mc Coy, John	Burglary, 1st degree	15	4		Dec. 16, 1861	New York	Sing Sing
do	9	Lo Bianaco, Antonio	Grand larceny	3	8		Dec. 10, 1860	do	do
do	11	Watson, James C.	Forgery, 3d degree	4			March 16, 1859	Westchester	do
do	13	Voorhies, Wm. T.	Forgery, 3d degree	2			May 28, 1861	New York	Clinton.
do	13	Baxter, Nathaniel	Forgery 2d degree	5			May 16, 1859	do	Sing Sing.
Nov'r.	17	Sexton, Michael	Rape	15			Oct. 14, 1858	Schenectady	Clinton.
do	17	Jones, Thomas	do	15			Oct. 14, 1858	do	do
do	18	Easton, Wm. B	do	10			June 25, 1859	Niagara	Auburn.
do	19	Freeling, John	Petit larceny		3		Oct. 6, 1862	Albany	Albany Co. Penitentiary.
do	19	Taylor, John T.	‡Selling liquor without license				do 15, 1862	Erie	Erie Co. do
do	24	Brown, Robert	Grand larceny	8			do 21, 1857	Albany	Clinton.
do	25	Farrell, Thomas	Robbery, 1st degree	10			April 6, 1858	do	do
do	25	Stewart, John	Attempt to commit arson	5			May 18, 1859	Rensselaer	do
do	29	Cox, Pamaza	Arson, 3d degree	7			May 15, 1858	New York	do

do	29	McCue, Lewis	Grand larceny	2	......	......	Oct. 16, 1861	St. Lawrence	do
Dec'r.	2	Lester, John	Robbery, 1st degree	12	2	......	Aug. 5, 1857	New York	Sing Sing.
do	3	Herbert, Frans	Grand larceny	4	......	......	July 7, 1859	do	do
do	4	Gallagher, James	Manslaughter, 1st degree	10	......	......	June 7, 1858	Rensselaer	Clinton.
do	5	Lee, James, Jr	Burglary, 3d degree	2	......	......	April 1862	Albany	Albany Co. Penitentiary
do	6	Williams, Mary Ann	Grand larceny	5	......	......	August 6, 1859	New York	Sing Sing.
do	8	Parish, Charles H	Forgery	5	6	......	Dec. 14, 1859	Otsego	Auburn.
do	12	Taggert, Wm	Assault to harm	2	......	......	Sept. 28, 1861	New York	Sing Sing.
do	12	Meyers, Louis	Arson, 2d degree	10	......	......	June 4, 1861	Suffolk	do
do	13	Lewis, John	Burglary	12	6	......	Dec. 13, 1851	Kings	do †
Dec.	15	Allen, Chas., alias Longley, Charles W., alias Wesley Allen,	Grand larceny	4	......	......	June 14, 1860	New York	Sing Sing.
do	17	Edson, Jehiel W	Forgery	2	4	......	Dec. 28, 1861	Erie	Auburn.
do	24	Rogers, John	Burglary, 3d deg., and grand larceny	3	6	......	Jan. 11, 1860	Rensselaer	Clinton.
do	24	Dunnigan, John	Murder	Life.	......	......	Aug. 20, 1855	Albany	Clinton.
do	26	Smith, Charles	Grand larceny	5	7	......	Oct. 29, 1858	Chautauqua	Auburn.
do	26	Moore, Henry	Forgery, 2d degree	7	6	......	Feb. 11, 1858	Albany	Clinton.
do	27	Willis, Arnold	Bestiality	5	......	......	June 10, 1859	Genesee	Auburn.
do	29	Riordan, John	Grand larceny	2	......	......	April 26, 1862	New York	Sing Sing.
do	29	Griffin, James	Manslaughter	6	6	......	Oct. 7, 1856	Erie	Auburn.
do	29	Sherman, George	Burglary, 2d degree	9	6	......	March 11, 1856	Erie	Auburn.
do	29	Hennesey, Patrick	Arson, 3d degree	10	......	......	Oct. 29, 1860	New York	Clinton.
do	31	Gunn, Barney	Rape	10	......	......	March 19, 1862	Dutchess	Sing Sing.
do	31	Plant, William	§Assault and battery	......	......	......	Aug. 16, 1862	St. Lawrence.	County jail.
do	31	Holmes, John B	Robbery, 1st degree	15	6	......	Nov. 21, 1857	New York	Sing Sing.
do	31	Carroll, Chas	Forgery, 2d degree	2	......	......	Nov. 25, 1861	Westchester	Sing Sing.
do	31	Payne, Samuel	Selling liquor without license	......	6	......	Oct. 15, 1862	Erie	Erie Co. Penitentiary.
do	31	Toppin, Thomas	Murder	Life.	......	......	......	New York	Auburn.

* 2 months, or $25 fine. † 60 days, or $25 fine, or 60 days more. ‡ 6 months and $50 fine. § $150, and till paid, not exceeding six months.

E. D. MORGAN.

ALBANY, *December* 31, 1862.

REPORT OF PARDONS.—Continued.

Date.	Name of convict.	Crime.	Term of sentence.			Date of sentence.	County of	Prison.
			Years.	Months.	Days.			
Aug. 12	Comstock, Russell	Rape	10	1	......	March 17, 1860	Allegany	Auburn.
do 20	Bascom, Joseph H	Grand larceny	3	4	......	Dec. 1839	New York	New York Penitentiary.
do 21	Poole, Thomas	Passing counterfeit money	2	......	......	August, 1861	Onondaga	Onondaga Co. do
do 28	Wheaton, Daniel C	Burglary, 2d degree	5	......	......	Oct. 13, 1857	Broome	Auburn.
do 30	Berrigan, Bridget	Petit larceny	......	3	......	August 9, 1862	New York	New York Penitentiary.
Sept. 1	Conroy, Robert	Forgery, 4th degree	......	2	......	June 24, 1861	Albany	Clinton.
do 5	Wright, Smith	Robbery	10	6	......	November 1856	Erie	Auburn.
do 10	Riley, Margaret	Petit larceny	......	6	......	April 19, 1862	New York	New York Penitentiary.
do 11	Harver, George	Assault with intent to kill	10	......	......	Dec. 16, 1857	Albany	Clinton.
do 12	Laflesh, Joseph	Petit larceny, 2d offence	2	3	......	Feb. 19, 1861	St. Lawrence	do
do 13	Olsen, Seward	Grand larceny	2	......	......	April 22, 1862	New York	Sing Sing.
do 13	Mc Guire, William	*Disorderly conduct	......	......	......	August 8, 1862	Rensselaer	Albany Co. Penitentiary.
do 15	Trowbridge, James L	Burglary 3d degree and larceny	4	......	......	June 1, 1859	Oneida	Auburn.
do 22	O'Tool, Patrick	Bigamy	3	6	......	Oct. 4, 1860	Erie	Auburn.
do 24	Van Dusen, Eugene	Burglary and larceny	3	......	......	April 18, 1861	Warren	Clinton.
do 30	More, Ransom	†Assault and battery	......	......	......	Sept. 22, 1862	Schenectady	Albany Co. Penitentiary.
October 1	Ledgwitch, Matthew	Grand larceny	2	......	......	Sept. 30, 1861	Albany	Clinton.
do 3	Mc Coy, John	Burglary, 1st degree	15	4	......	Dec. 16, 1861	New York	Sing Sing
do 9	Lo Bianaco, Antonio	Grand larceny	3	8	......	Dec. 10, 1860	do	do
do 11	Watson, James C	Forgery, 3d degree	4	......	......	March 16, 1859	Westchester	do
do 13	Voorhies, Wm. T	Forgery, 3d degree	2	......	......	May 28, 1861	New York	Clinton.
do 13	Baxter, Nathaniel	Forgery 2d degree	5	......	......	May 16, 1859	do	Sing Sing.
Nov'r. 17	Sexton, Michael	Rape	15	......	......	Oct. 14, 1858	Schenectady	Clinton.
do 17	Jones, Thomas	do	15	......	......	Oct. 14, 1858	do	do
do 18	Easton, Wm. B	do	10	......	......	June 25, 1859	Niagara	Auburn.
do 19	Freeling, John	Petit larceny	......	3	......	Oct. 6, 1862	Albany	Albany Co. Penitentiary.
do 19	Taylor, John T	‡Selling liquor without license	......	......	......	do 15, 1862	Erie	Erie Co. do
do 24	Brown, Robert	Grand larceny	8	......	......	do 21, 1857	Albany	Clinton.
do 25	Farrell, Thomas	Robbery, 1st degree	10	......	......	April 6, 1858	do	do
do 25	Stewart, John	Attempt to commit arson	5	......	......	May 18, 1859	Rensselaer	do
do 29	Cox, Pamaza	Arson, 3d degree	7	......	......	May 15, 1858	New York	do

do	29	McCue, Lewis	Grand larceny	2	......	......	Oct. 16, 1861	St. Lawrence	do
Dec'r.	2	Lester, John	Robbery, 1st degree	12	2	......	Aug. 5, 1857	New York	Sing Sing.
do	3	Herbert, Frans	Grand larceny	4	......	......	July 7, 1859	do	do
do	4	Gallagher, James	Manslaughter, 1st degree	10	......	......	June 7, 1858	Rensselaer	Clinton.
do	6	Lee, James, Jr	Burglary, 3d degree	2	......	......	April 1862	Albany	Albany Co. Penitentiary
do	6	Williams, Mary Ann	Grand larceny	5	......	......	August 6, 1859	New York	Sing Sing.
do	8	Parish, Charles H	Forgery	5	6	......	Dec. 14, 1859	Otsego	Auburn.
do	12	Taggert, Wm	Assault to harm	2	......	......	Sept. 28, 1861	New York	Sing Sing.
do	12	Meyers, Louis	Arson, 2d degree	10	......	......	June 4, 1861	Suffolk	do
do	13	Lewis, John	Burglary	12	6	......	Dec. 13, 1851	Kings	do †
Dec.	15	Allen, Chas., alias Longley, Charles W., alias Wesley Allen,	Grand larceny	4	......	......	June 14, 1860	New York	Sing Sing.
do	17	Edson, Jehiel W	Forgery	2	4	......	Dec. 28, 1861	Erie	Auburn.
do	24	Rogers, John	Burglary, 3d deg., and grand larceny	3	6	......	Jan. 11, 1860	Rensselaer	Clinton.
do	24	Dunnigan, John	Murder	Life.	......	......	Aug. 20, 1855	Albany	Clinton.
do	26	Smith, Charles	Grand larceny	5	7	......	Oct. 29, 1858	Chautauqua	Auburn.*
do	26	Moore, Henry	Forgery, 2d degree	7	6	......	Feb. 11, 1858	Albany	Clinton.
do	27	Willis, Arnold	Bestiality	5	......	......	June 10, 1859	Genesee	Auburn.
do	29	Riordan, John	Grand larceny	2	......	......	April 26, 1862	New York	Sing Sing.
do	29	Griffin, James	Manslaughter	6	6	......	Oct. 7, 1856	Erie	Auburn.
do	29	Sherman, George	Burglary, 2d degree	9	6	......	March 11, 1856	Erie	Auburn.
do	29	Hennesey, Patrick	Arson, 3d degree	10	......	......	Oct. 29, 1860	New York	Clinton.
do	31	Gunn, Barney	Rape	10	......	......	March 19, 1862	Dutchess	Sing Sing.
do	31	Plant, William	§Assault and battery	......	......	......	Aug. 16, 1862	St. Lawrence	County jail.
do	31	Holmes, John B	Robbery, 1st degree	15	6	......	Nov. 21, 1857	New York	Sing Sing. ‡
do	31	Carroll, Chas	Forgery, 2d degree	2	......	......	Nov. 25, 1861	Westchester	Sing Sing.
do	31	Payne, Samuel	Selling liquor without license	......	6	......	Oct. 15, 1862	Erie	Erie Co. Penitentiary.
do	31	Toppin, Thomas	Murder	Life.	......	......	....	New York	Auburn.

* 2 months, or $25 fine. † 60 days, or $25 fine, or 60 days more. ‡ 6 months and $50 fine. § $150, and till paid, not exceeding six months.

E. D. MORGAN.

ALBANY, *December* 31, 1862.

REPORT OF PARDONS.—Continued.

Date.		Name of convict.	Crime.	Term of sentence.			Date of sentence.	County of	Prison.
				Years.	Months.	Days.			
Aug.	12	Comstock, Russell	Rape	10	1		March 17, 1860	Allegany	Auburn.
do	20	Bascom, Joseph H	Grand larceny	3	4		Dec. 1859	New York	New York Penitentiary.
do	21	Poole, Thomas	Passing counterfeit money	2			August, 1861	Onondaga	Onondaga Co. do
do	28	Wheaton, Daniel C	Burglary, 2d degree	5			Oct. 13, 1857	Broome	Auburn.
do	30	Berrigan, Bridget	Petit larceny		3		August 9, 1862	New York	New York Penitentiary.
Sept.	1	Conroy, Robert	Forgery, 4th degree		2		June 24, 1861	Albany	Clinton.
do	5	Wright, Smith	Robbery	10	6		November 1856	Erie	Auburn.
do	10	Riley, Margaret	Petit larceny		6		April 19, 1862	New York	New York Penitentiary.
do	11	Harver, George	Assault with intent to kill	10			Dec. 16, 1857	Albany	Clinton.
do	12	Laflesh, Joseph	Petit larceny, 2d offence	2	3		Feb. 19, 1861	St. Lawrence	do
do	13	Olsen, Seward	Grand larceny	2			April 22, 1862	New York	Sing Sing.
do	13	Mc Guire, William	*Disorderly conduct				August 8, 1862	Rensselaer	Albany Co. Penitentiary.
do	15	Trowbridge, James L	Burglary 3d degree and larceny	4			June 1, 1859	Oneida	Auburn.
do	22	O'Tool, Patrick	Bigamy	3	6		Oct. 4, 1860	Erie	Auburn.
do	24	Van Dusen, Eugene	Burglary and larceny	3			April 18, 1861	Warren	Clinton.
do	30	More, Ransom	†Assault and battery				Sept. 22, 1862	Schenectady	Albany Co. Penitentiary.
October	1	Ledgwitch, Matthew	Grand larceny	2			Sept. 30, 1861	Albany	Clinton.
do	3	Mc Coy, John	Burglary, 1st degree	15	4		Dec. 16, 1861	New York	Sing Sing
do	9	Lo Bianaco, Antonio	Grand larceny	3	8		Dec. 10, 1860	do	do
do	11	Watson, James C	Forgery, 3d degree	4			March 16, 1859	Westchester	do
do	13	Voorhies, Wm. T	Forgery, 3d degree	2			May 28, 1861	New York	Clinton.
do	13	Baxter, Nathaniel	Forgery 2d degree	5			May 16, 1859	do	Sing Sing.
Nov'r.	17	Sexton, Michael	Rape	15			Oct. 14, 1858	Schenectady	Clinton.
do	17	Jones, Thomas	do	15			Oct. 14, 1858	do	do
do	18	Easton, Wm. B	do	10			June 25, 1859	Niagara	Auburn.
do	19	Freeling, John	Petit larceny		3		Oct. 6, 1862	Albany	Albany Co. Penitentiary.
do	19	Taylor, John T	‡Selling liquor without license				do 15, 1862	Erie	Erie Co. do
do	24	Brown, Robert	Grand larceny	8			do 21, 1857	Albany	Clinton.
do	25	Farrell, Thomas	Robbery, 1st degree	10			April 6, 1858	do	do
do	25	Stewart, John	Attempt to commit arson	5			May 18, 1859	Rensselaer	do
do	29	Cox, Pamaza	Arson, 3d degree	7			May 15, 1858	New York	do

do	29	McCue, Lewis	Grand larceny	2			Oct. 16, 1861	St. Lawrence	do
Dec'r.	2	Lester, John	Robbery, 1st degree	12	2		Aug. 5, 1857	New York	Sing Sing.
do	3	Herbert, Frans	Grand larceny	4			July 7, 1859	do	do
do	4	Gallagher, James	Manslaughter, 1st degree	10			June 7, 1858	Rensselaer	Clinton.
do	6	Lee, James, Jr.	Burglary, 3d degree	2			April 1862	Albany	Albany Co. Penitentiary
do	6	Williams, Mary Ann	Grand larceny	5			August 6, 1859	New York	Sing Sing.
do	8	Parish, Charles H.	Forgery	5	6		Dec. 14, 1859	Otsego	Auburn.
do	12	Taggert, Wm	Assault to harm	2			Sept. 28, 1861	New York	Sing Sing.
do	12	Meyers, Louis	Arson, 2d degree	10			June 4, 1861	Suffolk	do
do	13	Lewis, John	Burglary	12	6		Dec. 13, 1851	Kings	do †
Dec.	15	Allen, Chas., alias Longley, Charles W., alias Wesley Allen,	Grand larceny	4			June 14, 1860	New York	Sing Sing.
do	17	Edson, Jehiel W	Forgery	2	4		Dec. 28, 1861	Erie	Auburn.
do	24	Rogers, John	Burglary, 3d deg., and grand larceny	3	6		Jan. 11, 1860	Rensselaer	Clinton.
do	24	Dunnigan, John	Murder	Life.			Aug. 20, 1855	Albany	Clinton.
do	26	Smith, Charles	Grand larceny	5	7		Oct. 29, 1858	Chautauqua	Auburn.
do	26	Moore, Henry	Forgery, 2d degree	7	6		Feb. 11, 1858	Albany	Clinton.
do	27	Willis, Arnold	Bestiality	5			June 10, 1859	Genesee	Auburn.
do	29	Riordan, John	Grand larceny	2			April 26, 1862	New York	Sing Sing.
do	29	Griffin, James	Manslaughter	6	6		Oct. 7, 1856	Erie	Auburn.
do	29	Sherman, George	Burglary, 2d degree	9	6		March 11, 1856	Erie	Auburn.
do	29	Hennesey, Patrick	Arson, 3d degree	10			Oct. 29, 1860	New York	Clinton.
do	31	Gunn, Barney	Rape	10			March 19, 1862	Dutchess	Sing Sing.
do	31	Plant, William	§ Assault and battery				Aug. 16, 1862	St. Lawrence.	County jail.
do	31	Holmes, John B	Robbery, 1st degree	15	6		Nov. 21, 1857	New York	Sing Sing.
do	31	Carroll, Chas.	Forgery, 2d degree	2			Nov. 25, 1861	Westchester	Sing Sing.
do	31	Payne, Samuel	Selling liquor without license		6		Oct. 15, 1862	Erie	Erie Co. Penitentiary.
do	31	Toppin, Thomas	Murder	Life.				New York	Auburn.

* 2 months, or $25 fine. † 60 days, or $25 fine, or 60 days more. ‡ 6 months and $50 fine. § $150, and till paid, not exceeding six months.

E. D. MORGAN.

ALBANY, *December* 31, 1862.

REPORT

Of Commutations granted during the year 1862, (*made in compliance with Art.* 4, *Sec.* 5, *of the Constitution.*)

Date of commutation.	Name of convict.	Convicted of the crime of—	Term of sentence.			Date of sentence.	Sentenced in county of—	To what prison.	Commuted to confinement—
			Years.	M'ths.	Days.				
Jan. 15..	Stillman, Jas. B..	Burglary, 1st degree..	5	......	......	June 9, 1858	Westchester	Sing Sing........	4 years in Sing Sing.
March 1..	Conway, Francis..	Forgery, 2d degree...	2	......	......	Aug. 22, 1861	Onondaga..	Onondaga co. Pen..	1 year in Onondaga co. penitent'y.
March 1..	Ward, Abraham..	Grand Larceny.......	2	......	......	April 9, 1861	New York..	Sing Sing........	1 year in Sing Sing.
May 29..	Andrews, Erastus.	Manslaughter	1	......	......	Mar. 13, 1862	Oswego	County jail.......	3 months in county jail.
July 10..	Swift, Henry.....	Forgery, 4th degree..	2	......	......	Sept. 9, 1861	New York..	Sing Sing........	1 year in Sing Sing.
July 16..	Tompkins, Charles	Petit larceny.........	......	4	......	April 30, 1862	Saratoga...	Albany co. Pen...	3 months in Albany co. penitent'y.
July 28..	Henry, Thomas...	Receiving stolen goods	2	7	......	Feb. 10, 1862	New York..	Sing Sing........	6 months in Sing Sing.
Aug. 11..	Morris, Merwin...	Petit larceny.........	......	6	......	May 8, 1862	Kings......	Kings co. Pen.....	4 months in Kings co. penitentiary.
Sept. 10..	Wilson, John.....	Burglary............	12	6	......	Mar. 14, 1854	Kings......	Sing Sing	9 years in Sing Sing.
Oct. 16..	Wendell, Peter...	Assault and battery...	......	3	......	Aug. 26, 1862	Schoharie..	Albany co. Pen...	2 months in Albany co. penitent'y.
Oct. 16..	Wendell, Thomas.	Assault and battery...	......	3	......	Aug. 26, 1862	Schoharie..	Albany co. Pen...	2 months in Albany co. penitent'y.
Oct. 16..	Wendell, Joseph..	Assault and battery...	......	3	......	Aug. 26, 1862	Schoharie..	Albany co. Pen...	2 months in Albany co. penitent'y.
Oct. 18..	Lauria, Stephen..	Rape	Life.	......	......	Dec. 9, 1858	Kings......	Sing Sing........	4 years 6 months in Sing Sing.
Nov. 26..	Larkin, James ...	Mansl'ter, 1st degree.	Life.	......	......	Dec. 24, 1858	New York..	Sing Sing........	4 years in Sing Sing.
Nov. 29..	Prosser, John	Burglary, 1st degree..	12	6	......	Mar. 14, 1854	Kings......	Sing Sing........	9 years in Sing Sing.
Dec. 13..	Irwin, John......	Mansl'ter, 2d degree..	4	......	......	Sept. 28, 1859	Albany	Clinton	3½ years in Clinton.
Dec. 26..	Place, Orrin F....	P'g counterfeit money.	10	......	......	April 23, 1859	Jefferson...	Auburn..........	4 years in Auburn.
Dec. 29..	Mullen, Thomas..	Robbery, 1st degree ..	10	......	......	June 12, 1854	Erie.......	Auburn..........	10 months in Auburn.
Dec. 29..	Mathews, Charles.	Highway robbery.....	10	4	......	Jan. 23, 1858	Ontario	Auburn..........	5 years 2 months in Auburn.

ALBANY, *December* 31, 1862

E. D. MORGAN.

Staat New-York.

No. 2.

IN ASSEMBLY,

Januar 7, 1863.

Botſchaft des Gouverneurs.

An die Legislatur.

Wir treten unter ungewöhnlich feierlichen Umſtänden zuſammen, um Geſetze für die Ehre, das Intereſſe und zum Schutze des Volkes des Staates New-York zu geben. Der von uns geleiſtete Eid, die Conſtitution der Ver. Staaten und des Staates New-York zu erhalten und unſere Pflichten treu zu erfüllen, hat jetzt beſondere Bedeutung. Er lehrt uns, jede dieſer Conſtitutionen als gleich heilig anzuſehen, ſagt uns, daß jede in ihrem reſpectiven Felde aufrecht erhalten werden muß. In dieſem Augenblick wird der Autorität der einen durch bewaffnete Rebellion offen Trotz geboten, während die andere gefährdet iſt durch die aus einem Bürgerkrieg hervorgehende Verwirrung und Zwietracht. Dieſer „Eid, Gelöbniß oder Teſt" iſt nicht eine bloße Ceremonie; er gehört zum Weſen der Aemter, welche wir bekleiden. So lange wir uns nicht feierlich den darin enthaltenen Geboten unterwerfen, mit Aufgebung unſerer perſönlichen Anſichten, dürfen wir keine amtliche Handlung begehen.

New-York hat zur Aufrechterhaltung der Bundes-Regierung ſeit dem Ausbruch dieſes Krieges 220,000 Soldaten in's Feld geſtellt. Bei der Organiſation dieſer großen Armee haben mein Vorgänger und die Mitglieder ſeines militäriſchen Stabes einen unermüdlichen Eifer und große Fähigkeit entfaltet. Die aus dieſer Aufgabe hervorgehenden Pflichten waren größer, als die den Beamten anderer Staaten zufallenden, und ein Vergleich der Art der Erfüllung derſelben mit der Führung des Krieges ſeitens der General-Regierung muß zu Gunſten unſerer Beamten ausfallen. Während unſere Soldaten ihr Leben der Gefahr ausſetzen, um die Conſtitution aufrecht zu erhalten und die Union wieder herzuſtellen, ſind wir ihnen, welche eine ſolche in der Weltgeſchichte unerhörte Ausdauer und Patriotismus an den Tag gelegt haben, den Beweis ſchuldig, daß wir ihre Hingebung zu würdigen wiſſen. Wir haben dafür zu ſorgen, daß ſie bei ihrer Heimkehr ihre heimiſchen Rechte unangetaſtet finden, daß ſie nicht bei ihrer Rückkehr zu ihrem bürgerlichen Berufe erkennen müſſen, wir haben die Sicherheit ihrer Perſonen, die Heiligkeit ihres Heerdes verloren gehen laſſen und die Beſchützung ihres Eigenthums verabſäumt, während ſie auf einem entfernten Schlachtfelde für die Nation kämpften.

Ich werde es für meine Pflicht halten, alle vacanten Stellen in der Armee durch Beförderung für Verdienſte oder tapferes Benehmen zu beſetzen; dies iſt ein Akt der Gerechtigkeit, indem dadurch diejenigen belohnt werden, welche Belohnung ſo wohl verdient haben, und weil dadurch in Offizieren und Soldaten ein lobenswerther Ehrgeiz entzündet wird, ſich im Dienſte des Vaterlandes ehrenvoll auszuzeichnen.

Unſere Staats-Angelegenheiten.

Während ſo viele Theile unſeres Landes durch Krieg verödet, ſeine Städte und Ortſchaften verwüſtet, ſeine Häuſer zerſtörk, ſeine Bürger gemordet ſind und alles, was ſociales Glück ausmacht, unter den Füßen der Armeen zertreten wird, haben wir Urſache zur Dankbarkeit, daß in dieſem Staate die öffentliche Wohlthätigkeit auf's freigebigſte ausgeübt wird. Noth, Leiden und Gebrechen aller Art iſt abgeholfen worden. Unſere Schulen und höheren Unterrichts-Anſtalten blühen. Inſtitute, welche junge, unerfahrene Menſchen von dem Pfade des Laſters abhalten ſollen, ſind fortwährend beſtrebt, Elend und Verbrechen zu verhüten. Unſere Gefängniſſe ſchützen durch ihr liberales Syſtem, welches ſowohl zu beſſern als zu beſtrafen beabſichtigt, unſere Gemeinde fortwährend gegen überwieſene Verbrecher. Unſere Gerichte gewähren Perſonen und Eigenthum Schutz, Gewerbe und Ackerbau werden durchgehends mit Erfolg betrieben. Unſer großer innerer und auswärtiger Handel hat Verhältniſſe angenommen, welche die jeder früheren Periode hinter ſich laſſen. Ohne die trüben Kriegswolken, ohne die ſchweren Opfer an Gut und Blut, welche dieſer Krieg unſere Bürger koſtet, könnten nicht vier Millionen Menſchen gefunden werden, welche ſich eines größeren Glückes und einer größeren Wohlfahrt erfreuten.

Die fortgeſetzte reiche Unterſtützung, welche die Wohlthätigkeits-Anſtalten des Staates erhalten, ſelbſt inmitten eines Krieges, welcher die Kräfte jeder Nation der Gegenwart und Vergangenheit auf's Aeußerſte anſtrengen mußte, iſt ein ſchlagender Beweis für den erhabenen Wohlthätigkeitsſinn unſeres Volkes und die Größe ſeiner Hülfsquellen. Ich brauche mich nicht bei der Wichtigkeit jener herrlichen Inſtitute, der Staats-Irren-Anſtalt, des Taubſtummen-Inſtituts, des Blinden-Inſtituts, der Staats-Anſtalten für Blödſinnige und Aſoten aufzuhalten. Sie ſind außerordentlich berechtigt zur angemeſſenen Unterſtützung ſeitens des Staates. Die Waiſen-Aſyle und Staats-Hoſpitäler ſollten in einer Zeit beſonders unterſtützt werden, in welcher jede Schlacht viele Familien ihrer natürlichen Beſchützer beraubt und die Zahl Derjenigen vermehrt, welche Unterſtützung oder Pflege beanſpruchen können.

Ich empfehle die Erlaſſung eines Geſetzes, welches die Ernennung eines Arztes zum Commiſſär für die Irren-Anſtalten geſtattet; ſeine Pflicht ſollte es ſein, den Zuſtand der Irren zu unterſuchen, welche ſich jetzt in den Armen-Häuſern, Gefängniſſen und Privat-Irren-Anſtalten befinden. Die Sache iſt von ärztlicher Seite früheren Legislaturen dringend empfohlen worden, und ich glaube, daß die Humanität und Angemeſſenheit des Vorſchlages zu klar iſt, um von Ihnen eine andere als eine günſtige Behandlung zu erfahren.

Der Jahres-Bericht des Superintendenten des öffentlichen Unterrichts ergiebt, daß 829,989 Zöglinge die Schule im Jahre 1862 beſuchten, was eine viel größere Zahl iſt, als in irgend einem früheren Jahre. Auch wurde das Lehr-Perſonal bedeutend vermehrt, namentlich das weibliche, mehr Lehr-Gehalt bezahlt, und die Schulen waren durchſchnittlich länger offen, als in früheren Jahren.

Der Jahres-Bericht der Directoren der Univerſität wird zeigen, daß die Collegien und Academien des Staates, ungeachtet des Contingents, welches ſie in's Feld ſtellten, im lebhafteſten Betriebe waren. Die Zahl der Studirenden war 35,748, etwas über 1000 weniger als im vorhergehenden Jahre. Die Mittel zum höheren Unterricht mehren ſich und ſein Charakter wird gründlicher und umfaſſender als je.

Die Geſellſchaft zur Beſſerung verdorbener junger Leute in der Stadt New-York und das Zufluchtshaus von Weſt-New-York werden Ihnen ihre Jahresberichte vorlegen. Ich empfehle dieſe wichtigen Inſtitute Ihrer günſtigen Berückſichtigung.

Aus dem Berichte der Inſpectoren der Staats-Gefängniſſe geht hervor, daß die Zahl der Sträflinge in den Gefängniſſen am 30. September 2,410 betrug, die Einnahme der Staatskaſſe für deren Arbeit während des Fiscal-Jahres $191,048.77, die Ausgaben der Staatskaſſe für die Gefängniſſe $311,744.81.

Der Superintendent des Aſſecuranz-Departements wird in ſeinem Jahres-Bericht viele mit den wichtigen von ihm zu erfüllenden Pflichten in Verbindung ſtehende Thatſachen mittheilen, welche von allgemeinem Intereſſe ſind.

Der Jahres-Bericht des Superintendenten des Bank-Departements zeigt, daß der Geſammtbetrag der im Umlauf befindlichen, von jenem Beamten den Banken, Bank-Aſſociationen und Bankiers verabfolgten Noten war:

Am letzten 30. September		$42,239,836.00
Dieſe Noten ſind geſichert:		
Durch Hypotheken	$4,912,494.47	
N. Y. Staats-Fonds	19,022,890.10	
Andere Staats-Fonds	438,466.67	
Ver. St. Fonds	11,899,450.00	
Caution durch Spezial-Geſetze incorporirter Banken	65,289.14	
Baar-Depoſiten	103,720.60	
		$36,442,310.98
Geſammt-Betrag der Sicherheiten bis September 30, 1861		30,279,851.96
Zunahme der Sicherheiten in 1862		$6,162,459.02
„ der Noten-Circulation in 1862		5,633,696.00
„ der Ver. St. Fonds in 1862		6,810,150.00
Abnahme der Hypotheken in 1862		474,308.00
„ der N. Y. Staats-Fonds in 1862		100,815.82
„ der Ill. Staats-Fonds in 1862		36,783.33
Zahl der im Betrieb befindlichen Banken		305
Zahl der geſchloſſenen und inſolventen		53
		358

Die Emigrations-Commiſſäre berichten, daß während des Jahres 1862 75,982 ausländiſche Einwanderer in dem Hafen von New-York ankamen, was 10,453 mehr ſind, als im vorhergehenden Jahre. Die Commiſſäre glauben, daß eine ſtarke Einwanderung, welche die der vorhergehenden vier Jahre bedeutend überſteigt, bald aus allen Theilen Europa's beginnen wird. Ich empfehle Ihrer Berückſichtigung die in ihrem Jahres-Bericht enthaltenen Vorſchläge, und insbeſondere die in Betreff der Quarantäne. Die Stadt New-York und das Land im Allgemeinen ſind zu ſtark intereſſirt bei der Verbeſſerung des Sanitätsweſens der Emigration und der Beſchützung dieſes Hafens gegen anſteckende Krankheiten, um Maßregeln zu ihrer Beſchützung zu unterlaſſen.

Ich erneuere die folgende Empfehlung meines Vorgängers:

„Eine Aenderung iſt augenſcheinlich nothwendig in den Geſetzen, um deren Vollzug zu ſichern, insbeſondere in Betreff der Licenzen. Gegenwärtig genießen diejenigen, welche für Licenzen bezahlen, thatſächlich weder ein Vorrecht, noch Schutz dafür."

Das fällig gewordene Capital und die Zinſen der Staatsſchuld ſind in Hartgeld bezahlt worden. Während des letzten Fiscaljahres wurde die Staatsſchuld um $2,100,000 durch Einlöſung dieſes Betrages der Canal-Schuld reducirt.

Die fundirte Schuld.

Die fundirte Schuld betrug am 30. September:

Canal-Schuld	$23,981,610.25
General-Fond-Schuld	6,505,654.37
Geſammte Staatsſchuld	$30,487,264.62

Der Comptroller glaubt, daß, wenn wir keine weiteren Schulden machen und die gewöhnlichen Summen dem Amortiſations-Fond einverleiben, jene Schuld in 12 Jahren getilgt werden wird.

Reſt in Caſſa, einſchließlich Canal-Fond, 1. October 1861	$3,074,941.85
Einnahmen aus allen Quellen während des mit 30. September 1862 endenden Fiscal-Jahres	20,840,913.20
	$23,915,855.05
Zahlungen während derſelben Periode	18,165,233.86
Reſt in Caſſa, 1. October 1862	$5,750,621.19

Canal-Fond.

Reſt in Caſſa, zum Credit des Canal-Fond, 30. Sept. 1861		$2,604,621.25
Eingenommen während des Fiscal-Jahres aus Canal-Zöllen, überflüſſigem Waſſer und Zinſen von Revenuen	$4,854,989.67	
Steuer-Ertrag	2,769,623.09	
Aus anderen Quellen	168,881.61	
		7,793,494.37
		$10,398,115.62
Zahlungen während derſelben Periode:		
Einlöſung von Fonds	$2,120,000.00	
Zinſen von Fonds	1,429,859.36	
An Canal-Commiſſäre, Reparatur-Contractoren, Superintendenten, Collectoren und Wagenmeiſter	1,758,621.33	
Vermiſchte Ausgaben	509,331.10	
		$5,808,811.79
Reſt zum Credit des Canal-Fond am 30. September 1862		$4,589,303.83

Die Brutto-Einnahmen von Zöllen für die abgelaufene Schifffahrts-Saiſon betrug ungefähr $5,180,000. Dieſe Summe aber repräſentirt nur die in die Staatskaſſe für Benutzung der Canäle bezahlten Summen. Unſere Bürger, welche die Spediteure zwiſchen den Seen und der Stadt New-York ſind, ſowie diejenigen, welche ſich mit Spedition auf unſeren Binnen-Gewäſſern und auf dem Ocean abgeben, ziehen einen viel größeren Vortheil aus unſerem Handel mit dem Weſten. Die große Ausdehnung unſerer Binnen-Spedition kann nur annähernd geſchätzt werden, aber die folgenden Ziffern werden keinesfalls zu hoch gegriffen ſein:

1) Tonnen-Gehalt der in 1862 auf den Canälen beförderten Güter	4,900,000
2) do. auf den Eiſenbahnen bis 30. September	6,600,000
In einem Jahre	11,500,000
Taxirter Werth von No. 1..............................	$141,000,000
do. von No. 2..............................	159,000,000
In einem Jahre	$300,000,000

Es mag hinzugefügt werden, daß 70 Proc. des Werthes der Canal-Frachten und 80 Proc. des Werthes der Eiſenbahn-Frachten von Weſten nach Oſten befördert werden. Dieſe Thatſachen ſollten uns veranlaſſen, dem großen und ſteigenden Handel des Weſtens jede Erleichterung zu ſichern, da wir für den ungeheuren Durchfuhrhandel, der einen ſo großen Theil unſeres Frachtverkehrs bildet und die wichtigſte Quelle unſerer commerciellen Größe iſt, vorzüglich ihnen verpflichtet ſind. Gleichzeitig bildet dies eine der vielen Urſachen, die freundlichſten Beziehungen mit jener Section des Landes zu unterhalten.

Die ſeichten Stellen im Fahrwaſſer des Hudſonfluſſes beeinträchtigen in hohem Grade die Nützlichkeit unſerer Canäle. Die Erweiterung der letzteren veranlaßte den Bau von Booten von größerem Tiefgang, als dies früher der Fall war. Dieſelben werden, ohne ihre Ladung zu ändern, durch nach New-York geſchleppt, und nach den Frühjahrsregen paſſirt es häufig, daß ſie im Hudſon auffahren, nachdem ſie ohne Gefahr durch die Canäle kamen. Entſprechende Maßnahmen zur Beſeitigung dieſer Hinderniſſe ſollten getroffen werden.

Der Geſammtwerth des Grund- und perſönlichen Eigenthums im Staate in 1862 war $1,449,303,948. Dies überſteigt die Schätzung des vorhergehenden Jahres um $7,536,515, obwohl die Abſchätzung in den Städten New-York und Brooklyn um beiläufig 50 Millionen geringer iſt als früher.

Die Staatstaxe für letztes Jahr war zu der Rate von 4⅛ Mills für jeden

Dollar ſteuerbares Eigenthum. Nach der Schätzung des Comptrollers wird weniger als die Hälfte dieſer Rate für das gegenwärtige Jahr genügen, außer wenn einige außerordentliche Bewilligungen durch die Legislatur gemacht werden.

Im letzten Juli verlangte der Präſident 300,000 Freiwillige, und ſpäter verordnete er eine Ziehung für dieſelbe Zahl. Die Quote des Staates unter beiden Aufrufen beträgt 120,000 Mann. Die Erforderniſſe des Dienſtes erheiſchten, daß dieſe Truppen mit der größten Schnelligkeit geſtellt wurden. Es war die Erntezeit und Arbeiter waren ſehr geſucht. Der Staat hatte bei früheren Gelegenheiten ſo ſchnell die Requiſitionen der Regierung erfüllt, daß eine große Abneigung gegen Zwangsmaßregeln ſtattfand. Man glaubte, daß durch das Angebot entſprechender Handgelder eine Conſcription vermieden werden könnte. Aber keine Zahlung konnte vom Staatsſchatzamte verlangt werden, ohne Ermächtigung der Geſetzgebung. Zur Erlangung derſelben wäre eine Extra-Sitzung nothwendig geworden, die Verzögerung und Auslagen verurſacht hätte. Die Commercial Bank von Albany erbot ſich, die nöthige Summe für Handgelder vorzuſchießen und das Riſico der Wiedererſtattung durch die Geſetzgebung zu übernehmen. Das Angebot wurde angenommen und entſprechende Vorkehrungen getroffen. Mein Vorgänger erließ ſogleich eine Proklamation, in welcher er ein Handgeld von $50 für jeden Freiwilligen bot, der von da ab in den Dienſt der Ver. Staaten trat. Das ſo vorgeſtreckte Geld wurde durch den General-Zahlmeiſter des Staates vertheilt. Der Jahres-Bericht des Comptrollers giebt die Details. Da die Staatstaxe, die unter Autorität von Kapitel 456 der Geſetze von 1862 zur Zahlung der von den Ver. Staaten auferlegten direkten Steuern erhoben wurde, nicht nothwendig iſt und ihr Ertrag im Staatsſchatz bleibt, ſo kann ſie zur Zurückzahlung dieſer Gelder verwendet werden.

Ich empfehle daher ein Geſetz, welches die nöthige Verwilligung macht und das Verfahren des Gouverneurs in dieſer Beziehung beſtätigt, und ich gebe herzlich meine Zuſtimmung zu den in dieſer Angelegenheit getroffenen Schritten. Nebſt den Handgeldern, die vom Staate angeboten wurden, hat man in verſchiedenen Lokalitäten große Summen den Freiwilligen zugelegt, und ich empfehle die Paſſirung entſprechender Geſetze, wodurch die Collection dieſer ſelbſtauferlegten Verpflichtungen ermöglicht wird.

Die Bevölkerung dieſes Staates betrug in 1860 3,880,735. Die Zahl der von den Muſterungs-Offizieren als militärpflichtig Eingeſchriebenen iſt 764,603. Die Zahl der wegen verſchiedener Urſachen als untauglich Eingetragenen zwiſchen dem 18. und 45. Jahre iſt 139,198.

Seit dem Ausbruch des Krieges hat der Staat New-York 222,836 Mann in's Feld geſchickt. Die Zahl der von dieſem Staat augenblicklich im Feld Befindlichen iſt auf 125,000 geſchätzt, was ſeit dem Beginn des Krieges 97,836 dienſtuntauglich gewordene Leute anzeigt, oder 33 Procent von der ganzen Zahl, gleich 42,000 Mann per Jahr. Um die Quote dieſes Staates unter dem ergangenen Aufruf zu füllen, ſind 30,788 weitere Volontärs erforderlich, es ſei denn, daß die Regierung dem Staat für den vor dem 2. Juli 1862 geſandten Ueberſchuß Credit geben will.

Ich mache Sie auf die Ungleichheit und Ungerechtigkeit der Geſetze aufmerkſam, unter welchen Soldaten für den Dienſt der General-Regierung conſcribirt werden ſollen. Während einer langen Friedensperiode hat man unſerem Militärſyſtem nur geringe Aufmerkſamkeit geſchenkt. Für die Zwecke einer Conſcription iſt es durchaus unzulänglich; es enthält keine der Beſtimmungen, welche in den europäiſchen Syſtemen die Uebel eines Zwangsmilitärdienſtes mildern; es nimmt einerſeits keine Rückſicht auf die Uebel, die es zufügen mag, und geſtattet andererſeits zahlreiche Ausnahmen, die unverträglich ſind mit Billigkeit und dem Geiſte unſerer Conſtitution, die in Betrachtung hat, daß alle Perſonen im entſprechenden Alter in gleicher Weiſe Militärdienſte leiſten oder ein Aequivalent bezahlen ſollen. Dieſe Abſicht iſt in der erſten Conſtitution unſeres Staates vollſtändig ausgeſprochen:

„Es iſt für die Sicherheit eines jeden Staates von der größten Bedeutung, jederzeit in einem Zuſtande der Vertheidigung ſich zu befinden; und es iſt die Pflicht eines jeden Mannes, der ſich des Schutzes der Geſellſchaft erfreut, auch zu ihrer Vertheidigung bereit und willig zu ſein."

Die gegenwärtige Conſtitution hat eine ähnliche Beſtimmung. Doch nicht nur das organiſche Staatsgeſetz, ſondern Gerechtigkeit erheiſcht, daß ein jeder des Schutzes der Geſellſchaft ſich erfreuende Mann zur Vertheidigung derſelben bereit ſein ſollte. Neuerliche Geſetzgebung über dieſen Gegenſtand iſt weit von dieſem Grundſatz abgewichen; keine Bedingungen ſind vorgeſchrieben, auf welche Perſonen entſchuldigt werden können, welche durch Gewiſſensſcrupel vom Waffentragen zurückgehalten werden. Die Ausnahmen ſind ſo weit ausgedehnt, daß ganze Klaſſen nicht nur vom Militärdienſt frei ſind, ſondern nicht einmal ein Aequivalent zu bezahlen brauchen. Verſchiedene Beamten und andere Klaſſen ſind ausgenommen, deren Anſprüche auf dieſe Bevorzugung nicht beſſer ſind, als die eines jeden andern ſich nützlich beſchäftigenden Bürgers.

Dieſe bevorzugten Klaſſen ſind gewöhnlich in einer beſſern Lage, ein Aequivalent zu geben, als die Maſſe Jener, welchen dieſe Verbindlichkeit auferlegt iſt. Solche ungerechte Unterſcheidungen ſollten nicht ſtatthaben;

alle im bezüglichen Alter ſtehenden männlichen Bürger ſollten gleich militärpflichtig ſein; wenn untaugliche Perſonen gezogen werden, ſo ſollten ſie eine durch geeignete Tribunale zu beſtimmende billige Summe erlegen. Wenn ſie nicht im Stande ſind zu bezahlen, ſo kann der Betrag erlaſſen werden, oder ſie können gleich den Feuerleuten in einem andern ehrenvollen Zweige des öffentlichen Dienſtes Erſatz leiſten. Wenn das Loos öffentliche Diener trifft, ſo können ſie Erſatzmänner ſtellen, oder ſolche Commutationen geben, wie das Geſetz ſie vorſchreibt. Es iſt unläugbar unbillig, daß Diejenigen frei ausgehen ſollten, welche die Ehre und Vortheile einer öffentlichen Stellung genießen, während der einzige Sohn der Wittwe, oder die einzige Stütze der Familie in weiter Ferne in gefährlichem Dienſt ſtehen müſſen.

Ich empfehle Ihrer Aufmerkſamkeit ſolche andere Beſtimmungen, wie ſie in europäiſchen Ländern beſtehen zur Milderung der Uebel einer Zwangs-Conſcription, welche Beſtimmungen dort das Reſultat einer langjährigen Erfahrung ſind.

Das von der letzten Geſetzgebung angenommene Militärſyſtem kann nicht zeitig genug verbeſſert werden, um den wahrſcheinlichen Aufforderungen der Regierung entſprechen zu können; einen Verſuch, eine Ziehung auf die vorhandene Muſterrolle vorzunehmen, hat man mit Schwierigkeiten und Gefahren der ernſthafteſten Art verbunden gefunden, und da in Folge deſſen die Ziehung nothwendig ausgeſetzt werden mußte, ſo nimmt dieſer Gegenſtand Ihre unverweilte Aufmerkſamkeit in Anſpruch.

Die den Soldaten von 1812 von der Regierung der Ver. Staaten ſchuldigen Beträge ſind durch die für dieſen Zweck aufgeſtellten Commiſſäre zu $877,628 ermittelt worden. Ich empfehle das unverweilte Ergreifen ſolcher Maßregeln, die zur Auszahlung der den verſchiedenen Anſpruchsberechtigten ſchuldigen Beträge leiten können.

National-Angelegenheiten.

Die Verfaſſung macht es mir zur Pflicht, Ihnen den Zuſtand des Staates mitzutheilen. Ich kann dies nicht thun, ohne von der Union und dem Krieg zu ſprechen, der unſer Vaterland bedrängt, und der auch den ausgedehnten Handel von New-York beeinträchtigt, alle ſeine Geſchäfte beſteuert, mehr als 200,000 Mann aus unſeren Werkſtätten und von unſeren Feldern entführte und Trauer in die Heimſtätten unſerer Bürger brachte. Der Geiſt unſeres Regierungsſyſtems und die Intereſſen unſeres Volkes verlangen, daß die Verhältniſſe dieſes Krieges mit voller Freiheit erörtert werden. Es ſteht nicht blos das Nationalleben auf dem Spiele, ſondern es iſt darin jedes perſönliche, jedes Familien-, jedes heilige Intereſſe verwickelt. Wir müſſen uns mit der großen Frage des Tages beſchäftigen; wir müſſen uns die Gefahren unſerer Lage vorführen. Die Wahrheiten unſerer finanziellen und militäriſchen Situation dürfen nicht vorenthalten werden. Es darf kein Verſuch gemacht werden, den vollen Ausdruck der öffentlichen Meinung zu unterdrücken. Sie muß gekannt und berichtet werden, um die Regierung in Stand zu ſetzen, die öffentlichen Angelegenheiten erfolgreich zu leiten.

Unter unſerer Bevölkerung herrſcht ein tiefes Verlangen, ſeinen wahren Zuſtand kennen zu lernen. Sie verlangt freie Erörterung. Dieſe ſollte ernſt, gründlich und patriotiſch geführt werden. Die feierliche Veranlaſſung und die Leiden des Krieges ſollten die Tugend, die Intelligenz und den Patriotismus des amerikaniſchen Volkes neu beleben. Die Abnahme dieſer Eigenſchaften hat unſer Unglück über uns gebracht. Es giebt jetzt keine Urſachen zur Uneinigkeit, die in unſerem Lande nicht immer exiſtirt hätten, und welche von unſern Ahnen bei der Bildung der Union nicht geahnt wurden. Sie hatten die Größe, den Edelmuth und die Tugend, dieſelben zu vergleichen und zu ordnen. Der Werth der Union, die ſie damals ſchufen, hat ſich als größer erwieſen als ſie gehofft. Dennoch wurden wir gleichgültig gegen ſie, als wir im vollen Genuſſe ihrer Segnungen waren. Wir vergaßen den Charakter und die Hülfsquellen unſerer eigenen Landsleute, während wir den großen Vortheil eines ungehinderten Verkehrs mit allen Landestheilen hatten.

Als die Welt über die Macht und den Wohlſtand, die aus unſerer nationalen Union erwuchſen, erſtaunte, waren ſectionelle Vorurtheile und Leidenſchaften thätig, die brüderliche Zuneigung und edelmüthige Liebe in unſerem Lande zu zerſtören. Während wir mit unſerer Intelligenz prahlten, waren Leute hartnäckig und emſig in der Preſſe wie in den Hallen der Geſetzgebungen beſchäftigt, der Bevölkerung des Nordens und des Südens zu lehren, ſich einänder zu unterſchätzen und zu vernichten. Feindſelige Geſetze und die Theilung unſerer Kirchen beeinträchtigten den religiöſen und geſellſchaftlichen Verkehr. Hätte der Norden und der Süden eines des andern Macht und Abſichten begriffen, ſo würden unſere Zwiſtigkeiten beigelegt worden ſein. Dieſe Mißdeutung, ſo blutig und ſchrecklich in ihren Wirkungen, wurde ſyſtematiſch und emſig eingepflanzt.

Urſachen des Krieges.

Ueber den Ruin, den ſie verurſacht, erſchreckt, beſtehen die Urheber unſerer Calamitäten im Norden und Süden darauf, daß dieſer Krieg durch einen unvermeidlichen Streit über die Sklaverei veranlaßt worden ſei. Dies war der Gegenſtand, nicht die Urſache des Streites. Die Urſache dieſes Krieges erkennen wir in einer allgemeinen Nichtberückſichtigung der Verpflichtungen der Geſetze und Verfaſſungen; in der Mißachtung der conſtituirten Behörden, und vor Allem in den lokalen Vorurtheilen, die groß wurden in zwei Theilen der atlantiſchen Staaten, den beiden Extremen unſeres Vaterlandes, deren entfernte Lagen ſie minder gut unterrichtet und deren Intereſſen ſie minder rückſichtsvoll machten bezüglich des Zuſtandes und Charakters unſeres ganzen Volkes, als jene, welche in den großen, mittleren und weſtlichen Theilen der Union wohnen. Es giebt keine ehrliche Darlegung unſerer Schwierigkeiten, welche nicht lehrt, daß unſer Volk ſowohl ſich ſelbſt reformiren müſſe, wie die Verwaltung unſerer Regierung und die Politik unſerer Regierenden. Ein jedes Unglück, unter dem wir leiden, wurde von unſeren Vätern beſtimmt prophezeit als die Folge der Leidenſchaften und Local-Vorurtheile, die während der letzten fünfzehn Jahre aufgeſchoſſen ſind.

Es iſt nicht zu ſpät, unſer Land zu retten, wenn wir im rechten Geiſt und auf rechtem Wege die heilige Pflicht unternehmen. Wenn wir ſo handeln, wird die Wirkung durch das Land und die civiliſirte Welt geſehen und gefühlt werden. Wir werden dann unſere Regierung ſtärken; wir werden die Rebellion ſchwächen; wir werden unſer Volk vereinigen; und die Welt wird unſere Befähigung zur Selbſtregierung anerkennen, wenn wir zeigen, daß wir der Selbſtreformirung fähig ſind.

Achtung vor Geſetzen und Regierenden.

Wir müſſen erſtlich das Benehmen unſerer Väter nachahmen und Gehorſam den beſtehenden Behörden und Achtung vor geſetzlichen und conſtitutionellen Verpflichtungen zeigen.

„Schon der Gedanke der Macht und des Rechtes des Volkes, eine Regierung einzuſetzen, ſetzt die Pflicht eines jeden Individuums voraus, der eingeſetzten Regierung zu gehorchen.“

Dennoch hat ein Geiſt des Ungehorſams die Grundlagen der Gemeinde-, Staats- und National-Autorität in jedem Theile unſeres Landes untergraben. Es iſt dies nicht blos die innere allgemeine Urſache des Krieges, es iſt auch die unmittelbare Veranlaſſung unſerer Calamitäten.

Wenn die Führer des Aufſtandes im äußerſten Süden behaupten, daß freie und Sklavenſtaaten in der Union nicht neben einander exiſtiren können, und dann dies vom äußerſten Norden von den Feinden unſerer Conſtitution wiederholt wird, ſo ſagen nämlich beide Parteien, ſie können die Geſetze und die Conſtitution nicht achten, weil ſie nicht wollen. Dieſer unloyale Geiſt muß niedergeworfen werden. Er iſt unvereinbar mit jeder ſocialen Sicherheit, mit der Sicherheit der Perſonen und des Eigenthums.

Um unſer Regierungsſyſtem aufrecht zu halten, iſt es auch nothwendig, daß wir der Autorität unſerer Regierer Achtung erweiſen. So lange ſie innerhalb der Grenzen ihrer Jurisdiction handeln, und die Intereſſen, die Ehre und die Würde unſeres Volkes repräſentiren, haben ſie Anſpruch auf ehrerbietige Behandlung. Wo es ihr Recht iſt, über Maßregeln und Politik zu entſcheiden, iſt es unſere Pflicht zu gehorchen und ihre Entſcheidungen bereitwillig zu unterſtützen; dies iſt ein weſentliches Freiheits-Maxime. Ohne dieſe Loyalität kann keine Regierung die öffentlichen Angelegenheiten mit Erfolg leiten, kann kein Volk im Genuſſe ſeiner Rechte geſichert ſein. Dieſe Pflicht iſt beſonders bindend unter unſerem Syſtem, welches dem Volke das Recht giebt, bei ſeinen Wahlen zu Gericht zu ſitzen über ſeine Herrſcher, ſie zu billigen oder zu verurtheilen, ſie in den amtlichen Stellungen zu belaſſen, oder daraus zu vertreiben.

Dieſer Krieg hätte abgewendet werden ſollen; doch als ſeine Schleuſenthore geöffnet waren, konnte die Adminiſtration ſeinen Umfang nicht erfaſſen, noch ſeinen Gang controlliren. Die Regierung wurde von der Strömung fortgeriſſen, und kämpfte ſo gut ſie's konnte gegen die unwiderſtehliche Fluth. Wenige ſchienen im Stande, ſeine militäriſchen oder finanziellen Probleme zu begreifen. Deshalb iſt es nicht an uns, in ſtrengem Gericht zu ſitzen über Irrthümer in der Deutung oder Politik.

Doch während wir alle dieſe Entſchuldigungen für Irrthümer zulaſſen, werden wir die Irrthümer nicht annehmen, noch Verletzungen des Prinzips ſanctioniren. Dieſelben Urſachen, welche ihre Fehler im Urtheile mildern, müſſen uns um ſo wachſamer machen, uns vor ihren Einflüſſen zu hüten. Ungewöhnliche Gefahren erheiſchen ungewöhnliche Wachſamkeit.

Sparſamkeit und Redlichkeit.

Sparſamkeit und Redlichkeit in der Verwaltung der öffentlichen Angelegenheiten ſind zu allen Zeiten weſentlich, ſie ſind in Kriegszeiten eine Lebensfrage. Wenn die Kraft des Volkes, um die Kriegsausgaben zu tragen, gebrochen iſt, haben wir unſere Mitbürger vergebens in's Feld geſchickt, und haben in ununterſtützten Anſtrengungen, unſer Vaterland zu retten, ihr Blut umſonſt verſpritzt.

Die Gelegenheit, welche der Kriegszuſtand gewiſſenloſen Männern giebt, den öffentlichen Schatz zu plündern, und die Schwierigkeit, ihre Pläne zu durchkreuzen, müſſen berückſichtigt werden, wenn man die Redlichkeit unſerer Regierer beurtheilt. Doch während dieſe Schwierigkeiten ſie vor hartem Urtheile ſchützen, ſind ſie weitere Gründe zur Wachſamkeit und Vorſicht. Es liegt im Charakter des Krieges, mächtige finanzielle und ehrgeizige Intereſſen zu ſchaffen, die ſeine Dauer zu verlängern ſtreben. Es iſt eine ſeiner Hauptgefahren, daß er eine thätige Claſſe gründet, welche durch die Steuer, die auf die Arbeit und das Vermögen der Maſſe der Bürger gelegt wird, Macht und Reichthum gewinnt. Dieſe organiſirte Claſſe benützt den Nationalſchatz, um Pläne der Plünderung oder der Ehrſucht zu unterſtützen, und die dem Volke entrungenen Steuern werden ſo dazu verwendet, den Kriegszuſtand und die Militär-Regierung zu verlängern. Die Macht unſerer Herrſcher, dieſe Einflüſſe zu beſeitigen, muß durch die erſchöpfendſte Darlegung unſerer finanziellen Angelegenheiten unterſtützt und geſtärkt werden.

Verſchwendung und Corruption ſind Verletzungen des den öffentlichen Gläubigern verpfändeten Wortes. Das dem Nationalſchatz geliehene Geld wurde nicht in einer Zeit des Friedens und Vertrauens, ſondern in einer Zeit des Zweifels und der Gefahr gegeben. Dieſe Guthaben ſind in den Händen von Reichen und Armen. Die Beträge, welche in den Händen der Corporationen ſind, repräſentiren die Intereſſen von Weibern und Kindern, Alten und Gebrechlichen. Das Recht unſerer Soldaten, Sparſamkeit und Redlichkeit zu verlangen, iſt von heiligſter Art. Niemals in der Geſchichte der Welt wurden Heere von ſolcher Größe aus ſolchen gebildet, die gedeihende Geſchäfte und glückliche Heimſtätten freiwillig verließen, um die Erfahrungen und Entbehrungen des Krieges zu leiden. Als Niederlagen oder Tod durch Gewalt oder Krankheit die Reihen unſerer Heere verdünnten, ſtellten ſie ſich raſch und freiwillig, um die Flagge des Vaterlandes zu retten. Ein furchtbares Verbrechen wird von denen begangen werden, welche zugeben ſollten, daß ein Nationalbankrott die um den Preis von Blut, Geſundheit und Gefahren gewonnenen Penſionen und Bounties in Staub und Aſche verwandle. Dieſe Penſionen werden in manchen Fällen die einzige Stütze für ſolche ſein, die ſo unfähig gemacht wurden, ſich ſelbſt zu erhalten.

Es iſt ſchlimmer, wenn eine Regierung durch Corruption geſtürzt wird, als durch Gewalt. Ein tugendhaftes Volk wird ſeine Rechte wieder erlangen, wenn ſie ihm entriſſen wurden; doch für die iſt keine Hoffnung, welche zugeben, daß die Corruption das Gebäude ihrer Freiheit untergrabe und vermodern mache.

Gewalteinſchränkungen.

Es giebt nicht allein Verpflichtungen, welche unſerem Volke gegen unſere Behörden obliegen, ſondern unter unſerem politiſchen Syſtem giebt es auch Gewaltbeſchränkungen zwiſchen den verſchiedenen Regierungs-Departements, ſowie zwiſchen den Regierungen der Einzelſtaaten und der National-

Regierung, welche beobachtet werden müſſen, um das öffentliche Wohl zu ſichern. Gerade in der gegenwärtigen Zeit haben die warnenden Worte Waſhington's eine ganz beſondere Bedeutung:

„Es iſt eben ſo wichtig, daß die Gewohnheit des unbeſchränkten Denkens in einem freien Lande den mit deſſen Verwaltung beauftragten Perſonen die Vorſicht einflößen ſollte, ſich auf ihre betreffenden, ihnen von der Verfaſſung vorgeſchriebenen Wirkungskreiſe zu beſchränken, und in der Ausübung der Befugniſſe eines Departements ſich der Eingriffe in diejenigen eines andern zu enthalten. Der Geiſt der Anmaßung ſtrebt dahin, die Gewalten aller Regierungszweige in Einem zu vereinigen, und auf ſolche Weiſe, welches immer die Regierungsform ſei, einen wahren Despotismus zu gründen. Eine richtige Würdigung jener Liebe zur Gewalt, ſowie der Geneigtheit zu ihrem Mißbrauch, welche in dem menſchlichen Herzen vorherrſchen, reicht hin, um uns von der Wahrheit dieſes Satzes zu überzeugen."

Das geſetzgebende, vollſtreckende und richterliche Departement ſind einander gleich geordnet. Es iſt gleich hochverrätheriſch, ſich der rechtmäßigen Autorität irgend eines derſelben zu widerſetzen. Die Gewalt irgend eines Departements umzuſtürzen, iſt Revolution. Die Rechte der Geſetzgebung, die Befugniſſe der Executiv-Behörde und die Unabhängigkeit der Gerichte ſind gleich heilig zu halten. Mißachtung der Schranken der Staats- und der National-Regierung und Einmiſchung eines Departements in die Geſchäfte eines andern ſtehen nicht allein mit dem Geiſte und der Einrichtung unſerer bürgerlichen Regierung im Widerſpruch, ſondern haben auch in der Führung des Krieges Unheil geſtiftet.

Während das Kriegs-Departement die Autorität der Gerichte bei Seite ſetzt und die Geſetze der Staaten über den Haufen wirft, verſammeln ſich die Gouverneurs gewiſſer Staaten, um die Politik der National-Regierung anders zu geſtalten; die National-Geſetzgebung beſtellt Committees, um ſich in die militäriſche Leitung des Krieges einzumiſchen, und Senatoren treffen geheime Verabredungen, um dem Präſidenten die Wahl ſeiner verfaſſungsmäßigen Rathgeber vorzuſchreiben. Die natürlichen Folgen ſolcher Einmiſchung und Umtriebe ſind nicht ausgeblieben. Während unſere Heere auf den von der Hauptſtadt entfernten Schlachtfeldern Siege gewonnen haben, werden innerhalb des Bereiches des Waſhingtoner Einfluſſes die heldenmüthige Tapferkeit unſerer Krieger und die Geſchicklichkeit unſerer Heerführer gelähmt und zu Schanden.

Rechte der Einzel-Staaten.

Nicht allein muß die National-Regierung unverſehrt erhalten, ſondern die Rechte der Einzelſtaaten müſſen nicht minder heilig geachtet werden. Es beſtehen wohl Meinungsverſchiedenheiten hinſichtlich der Scheidelinie zwiſchen der Staats- und der National-Gewalt, aber es kann keine ſolche Verſchiedenheit darüber obwalten, daß ſolche abgeſonderte Gewalten beſtehen, deren jede beſondere Gebiete der Geſetzgebung und Verwaltung, die zur öffentlichen Sicherheit und Wohlfahrt weſentlich erforderlich ſind, begreift. Eine conſolidirte Regierung in dieſem ungeheuren Lande würde die wichtigſten Heimathsrechte und die Freiheiten des Volkes zerſtören. Die Souveränetät der Einzelſtaaten — ausgenommen ſoweit dieſelbe durch die Conſtitution beſchränkt iſt — kann niemals aufgegeben werden; ohne dieſelbe kann unſere National-Regierung nicht fortbeſtehen. Dieſe Regierung wurde durch die Thätigkeit der Staaten geſchaffen und kann nur durch dieſelbe verändert werden. Dieſes erhellt aus der folgenden Verfügung jener Urkunde ſelbſt:

„Die Genehmigung der Convente von neun Staaten ſoll zur Begründung dieſer Verfaſſung zwiſchen den dieſelbe annehmenden Staaten hinreichend ſein."

Ferner können drei Viertheile der Staaten die Befugniſſe der Bundesregierung erweitern oder ſchmälern, wenn ſie einen Convent verlangen, worin Abänderungen der Conſtitution vorgeſchlagen werden können, welche im Falle ihrer Genehmigung durch drei Viertheile der Staaten Theile der Verfaſſung werden.

Während die Staaten ſonach die Befugniſſe der allgemeinen Regierung beſchränken oder ausdehnen können, vermag dieſelbe auf keine Weiſe ein einziges Recht der Einzelſtaaten zu beeinträchtigen, noch in deren Regierungsgewalten Eingriffe zu machen.

Die Verpflichtungen, welche den Staaten obliegen, die Conſtitution, Geſetze und Behörden der National-Regierung zu achten, erheiſchen gleichfalls, daß die Letztere gleiche Achtung vor den Rechten und den verfaſſungsmäßigen Behörden der Einzelſtaaten beweiſe.

Von den Staatsgeſetzen und Behörden erwarten wir die Erhaltung guter Ordnung in der Geſellſchaft, die Sicherung von Leben und Eigenthum, den Schutz unſerer Heimſtätten und alles deſſen, was uns in den Verhältniſſen, Pflichten und Handlungen des Lebens das Nächſte und Theuerſte iſt. Es iſt gefährlich und erſchüttert die öffentliche Moral, wenn man Verachtung für die Behörden und Geſetze der Einzelſtaaten bezeigt. Es untergräbt ebenſowohl die Grundlagen der Staats- als der National-Regierung, wenn man das Geſellſchaftsſyſtem zerſtört. Wenn die heimiſchen Geſetze nicht geachtet werden, ſo wird auch die Autorität der Allgemeinen Regierung keinen Gehorſam mehr finden.

Willkürliche Verhaftungen.

Unſer Volk hat deßhalb mit Schrecken von Seiten gewiſſer Bundesbeamten Handlungen und Anmaßungen betrachtet, welche jedem Grundſatz guter Ordnung, bürgerlicher Freiheit und conſtitutionellen Rechtes Hohn ſprechen. Es wird behauptet, daß in Kriegszeiten der Präſident als Oberbefehlshaber unſerer Heere Befugniſſe habe, welche ihn ermächtigen, das Kriegsrecht zu verhängen, nicht allein innerhalb des Bereiches feindlicher Bewegungen, wo ein anderes Recht nicht in Kraft geſetzt werden könne, ſondern auch über unſer ganzes Land; daß er nach ſeinem Wohlgefallen nicht allein die Erlaſſe des Congreſſes, ſondern auch die Entſcheidungen der National-Gerichte mißachten könne; — daß in loyalen Staaten die niedrigſte und mindeſt einſichtsvolle Klaſſe von Unterbeamten mit der Befugniß bekleidet werden möge, nicht allein als Spione und Angeber zu handeln, ſondern auch ohne ein gehöriges gerichtliches Verfahren unſere Bürger zu verhaften und in den Kerker zu werfen, ja ſie über die Gränzen ihres Staates hinaus zu ſchleppen und ſie ohne Verhör oder Kenntniß des ihnen vorgeworfenen Vergehens in Gefängniſſen ſchmachten zu laſſen.

Nicht allein die Leidenſchaften und Vorurtheile dieſer untergeordneten Werkzeuge verleiten ſie zu Handlungen der Tyrannei, ſondern ihr Vortheil wird auch befördert und ihre Stellung geſichert, wenn ſie Unzufriedenheit und Zwietracht ſtiften. Sogar das Verlangen nach einem Rechtsbeiſtande iſt für ein Vergehen gehalten worden. Sehr treffend iſt die Bemerkung: „Eine Verhaftung, ohne zu wiſſen warum; eine Einſperrung, ohne fragen zu dürfen wo; um gerichtet zu werden, Niemand kann ſagen, wann, nach einem Rechte, das nirgends bekannt oder eingeführt iſt; oder ſein Leben lang in einer engen Zelle zu ſchmachten — das iſt eine Maſſe von Tyrannei, welche nicht wohl überboten werden kann.“

Die Unterdrückung von Zeitungen und die Einſperrung von Perſonen haben einen ſchreienden Partei-Charakter an ſich getragen, indem Manchen die höchſte Zügelloſigkeit der Kritik geſtattet wurde, während man Andere für eine billige Ausübung des Rechtes freier Discuſſion beſtrafte. Da man ſich dieſer groben Mißbräuche bewußt war, ſo hat man den Verſuch gemacht, die Schänder der Geſetze zu beſchirmen und eine Unterſuchung ihrer Beweggründe und Aufführung zu unterdrücken. Verfaſſungswidrige Handlungen können durch verfaſſungswidrige Geſetze nicht geſchützt werden. Solche Verſuche werden die Schuldigen nicht retten, während ſie ein gerechtes Verdammungsurtheil auf das Haupt Derer herabbeſchwören werden, die da verſuchen, die Befugniſſe der Geſetzgebung zu Zwecken der Unterdrückung zu mißbrauchen. Solche Schritte durch Beiſpiele aus der Praxis von Regierungen, deren geſetzgebende Gewalt keinen Schranken unterworfen iſt, zu rechtfertigen, kann unter unſerem Syſtem nichts fruchten, welches durch geſchriebene Conſtitutionen die Regierung einſchränkt und den Bürger beſchützt.

Ich will hier nicht unterſuchen, welche Rechte die in Rebellion begriffenen Staaten verwirkt haben; aber ich beſtreite es, daß dieſe Rebellion ein einziges Recht der Bürger loyaler Staaten entkräften oder aufheben kann. Ich verdamme die Lehre, daß der Bürgerkrieg im Süden dem loyalen Norden die Wohlthaten eines einzigen Grundſatzes bürgerlicher Freiheit entziehen könne.

Es iſt ein ſchweres Vergehen, einen Bürger dieſes Staates gewaltſam zu entführen. Es iſt mir durch die Conſtitution zur Pflicht gemacht, darauf zu ſehen, daß die Geſetze des Staates vollſtreckt werden. Ich werde jede angebliche Verletzung unſerer Statuten unterſuchen und darüber wachen, daß Miſſethäter zur Rechenſchaft gezogen werden. Scheriffs und Diſtrikts-Anwälte werden an ihre Pflicht gemahnt, Sorge zu tragen, daß ohne gerichtliches Verfahren oder die zuſtändige Autorität keine Perſon in ihren betreffenden Counties eingekerkert oder über deren Grenzen hinaus geſchleppt werde. Die Fortſchleppung angeblicher Miſſethäter nach England, weit weg von ihren Freunden, ihren Zeugen und Vertheidigungsmitteln, war eine der tyranniſchen Maßregeln, wegen deren wir unſere Unabhängigkeit behaupteten. Die Fortſchleppung von Bürgern aus dieſem Staate wegen angeblich hier verübter Vergehen nach viele Hunderte von Meilen entfernten Gefängniſſen in anderen Staaten oder Gebieten iſt eine ähnliche Gewaltthat nach jedem Grundſatze des Rechtes und der Gerechtigkeit.

Die Bundesregierung hat reichliche Befugniſſe zur Einſetzung von Gerichten, zur Anſtellung von Verhaftungs-Beamten, von Commiſſären zur Anhörung von Klagen und zur Einkerkerung auf wahrſcheinliche Verdachtsgründe. Sie hat ein Gerichtsweſen, das in vollem und ungeſtörtem Gange iſt. Ihre Gerichtshöfe, die an gelegenen Orten in dieſem und anderen loyalen Staaten gehalten werden, ſtehen zur Anhörung aller Beſchwerden offen. Wenn ihre Geſetze zur Beſtrafung von Vergehen nicht ausreichen, ſo liegt die Schuld an der Saumſeligkeit der Gewalthaber.

Die Regierung ſtärkt ſich nicht durch die Ausübung zweifelhafter Gewalten, ſondern durch eine weiſe und kräftige Vollſtreckung ihrer unbeſtreitbaren Befugniſſe. Das erſtere Verfahren verfehlt niemals, Zwietracht, Argwohn und Mißtrauen zu erzeugen, während das letztere Achtung und Vertrauen einflößt.

Unſer loyaler Staat, deſſen Geſetze, deſſen Gerichtshöfe und deſſen Beamte auf ſolche Weiſe mit entſchiedener und öffentlicher Verachtung behandelt, und deſſen geſellſchaftliche Ordnung und heilige Rechte verletzt wurden, ſchickte gerade in jener Zeit große Heere in das Feld, um die National-Hauptſtadt zu beſchützen und die National-Beamten vor Flucht oder Gefangenſchaft zu bewahren. Gerade während die Waffen New-Yorks auf ſolche Weiſe die Bundes-Regierung gegen die Rebellion beſchirmten, war es ein untergeordnetes Departement in Waſhington, welches, ohne vorherige Berathung mit dem höchſten Beamten unſeres Staats, unſer Volk beſchimpfte und unſere Rechte antaſtete. Gegen dieſe Unbilden und Schandthaten hat das Volk des Staates New-York in ſeiner jüngſten Wahl eine feierliche Verwahrung eingelegt.

Die Unterwerfung unſeres Volkes unter dieſe Mißbräuche nur auf eine Zeitlang, wurde im In- und im Auslande als Gleichgültigkeit gegen ſeine Freiheiten mißdeutet. Aber es geſchah nur aus Achtung von unſern Inſtitutionen, daß es wartete, bis es ſeinen Willen in der durch unſere Geſetze angedeuteten Weiſe ausſprechen konnte. In der jüngſten Wahl bewährte es zugleich ſeine Achtung für die Geſetze und ſeine Liebe zur Freiheit. Inmitten der höchſten Wirren des Bürgerkrieges ſaß es ruhig zu Gericht über die National-Adminiſtration und ſtimmte gegen ihre Candidaten. Doch dieſes war nicht der einzige ſchlagende Beweis von Achtung für die Conſtitution. Die Minderheit, an Zahl faſt gleich ſtark, unterwarf ſich der Entſcheidung der Mehrheit ohne Widerſtand, obwohl der Wahlkampf durch ſtarke Parteileidenſchaften ſehr aufgeregt geweſen war. Dieſe ruhige Behauptung von Rechten und dieſe ehrenwerthe Unterwerfung unter den Wahrſpruch der Stimmurne rechtfertigte ſowohl den Charakter unſeres Volkes, als auch die Dauerhaftigkeit unſerer Inſtitutionen. Hätten ſich die Seceſſioniſten des Südens auf gleiche Weiſe verfaſſungsmäßigen Entſcheidungen unterworfen, ſo würden ſie ſich und unſer Vaterland vor den Gräueln dieſes Krieges bewahrt und würden dieſelbe Abhülfe für jede Unbill und Gefahr gefunden haben.

Kriegsrecht.

Die Beanſpruchung von Gewalten unter dem Kriegsrechte vernichtet nicht allein die Rechte der Einzelſtaaten, ſondern untergräbt auch die geſetzgebende und die richterliche Gewalt der Bundes-Regierung. Dieſe Anmaßung verlangt für den Präſidenten als das Oberhaupt der Armee mehr Gewalt, denn als den repräſentativen Oberbeamten des Volkes. Dieſer Anſpruch hat uns in den Augen der Welt mit Schande bedeckt. Er hat die Hoffnung der Rebellion beſtärkt; er hat das Vertrauen der loyalen Staaten erſchüttert; er beeinträchtigt den Werth unſerer Regierung bei dem Volke; er führt zu Zwietracht und Unzufriedenheit im Norden, während er den Süden vereinigt und gekräftigt hat.

Wenn eine Nothwendigkeit vorhanden iſt, welche jene Politik rechtfertigt, ſo laſſet uns offen und ehrlich eingeſtehen, es iſt eine Nothwendigkeit vorhanden, welche eine Revolution rechtfertigt. Doch dieſer Vorwand wird nicht als eine Nothwendigkeit aufgeſtellt, welche nur zeitweilig alle Schranken überſpringe und welche durch die äußerſte Noth gerechtfertigt werde; ſondern er ſoll einen feſtſtehenden Grundſatz bilden, welcher die Militärgewalt des Präſidenten über ſeine bürgerlichen und conſtitutionellen Befugniſſe erhebt. Man behauptet, daß er nach ſeinem Belieben Krieg erklären und alsdann die Conſtitutionen der Staaten und diejenige des Bundes dadurch vernichten mag, daß er das Grabtuch des Kriegsrechtes über unſer großes, weites Land ausbreitet.

„Kriegsrecht“ giebt ſich ſchon durch ſeinen Namen als ein Recht zu erkennen, welches nur da beſteht, wo Krieg iſt. Es beſchränkt ſeine Gültigkeit ſchon durch ſeine Benennung. Aber dieſe neue und ſeltſame Lehre behauptet, daß der loyale Norden ſeine conſtitutionellen Rechte verlor, als der Süden rebellirte, und das Ganze wird jetzt durch eine Militärdiktatur beherrſcht. Die Loyalität iſt auf ſolche Weiſe minder geſichert, als die Rebellion; denn Erſtere ſteht ohne Mittel da, um ſich Gewaltthaten zu widerſetzen, oder die Tyrannei zu ahnden.

Inmitten aller Greuel, welche unter dem Kriegsrechte in der Weltgeſchichte verübt wurden, und inmitten aller Rechtfertigungsgründe, die man für die Gebräuche jenes Rechtes vorbrachte, wurde doch noch niemals früher behauptet, daß es über friedliche Staaten ausgeübt werden könne. Es wurde niemals früher beanſprucht, daß die Befugniß eines Militärbefehlshabers über den Befugniſſen der Regierung erhaben ſtehe.

Vor länger als zwei Jahrhunderten erklärte jener kühne Vertheidiger der engliſchen Freiheit, jener redliche und unabhängige Richter, Lord Coke: „Wo Gerichtshöfe offen ſtehen, da kann kein Kriegsrecht ausgeübt werden,“ und ferner: „Eine Macht, die über den Geſetzen ſteht, gebührt dem Könige nicht zu verlangen, noch uns, ſie zu geben.“ Sind engliſche Geſetze heiliger, oder iſt die engliſche Freiheit geſicherter als die unſrige?

Es war einer der Gründe, welcher in der Erklärung der Unabhängigkeit für die Aufkündigung der Treue gegen den König von England aufgeſtellt wurde: „Daß er ſich beſtrebte, die Militärgewalt von der bürgerlichen Autorität unabhängig zu machen, ja über die letztere zu ſtellen.“

Während des Kampfes um Nationalexiſtenz, obwohl von Feinden, Spionen und Angebern umringt, welche die Anmaßungen der Krone unterſtützten, erklärte Waſhington niemals das Kriegsrecht, noch beanſpruchte er unter irgend welchen Umſtänden das Recht, die Militärautorität über die bürgerliche zu ſtellen. Im Gegentheil bezeigte er gegen die letztere die höchſte Ergebenheit. Alle von den Vätern der Republik begründeten Conſtitutionen huldigten dieſem Grundſatz.

Maſſachuſetts, New-Hampſhire, Connecticut, Delaware, Pennſylvania, Maryland, Nord-Carolina und Süd-Carolina — 8 der 12 Staaten, welche urſprünglich die Union bildeten — erklärten ausdrücklich, daß die Militärgewalt in allen Fällen und zu allen Zeiten in ſtrenger Unterwürfigkeit unter der Civil-Autorität gehalten und von derſelben beherrſcht werden ſolle; dies war in jeder Conſtitution faſt in denſelben Worten ausgedrückt. Es iſt unglaublich, daß ein Volk, welches dieſen Anſichten huldigte und welches auf ſeine Freiheiten ſo eiferſüchtig war, dem Oberbefehlshaber der Armee der Ver. Staaten dieſe despotiſche Gewalt geben ſollte, eine Gewalt, deren Ausübung der britiſchen Krone ſeit beinahe zwei Jahrhunderten nicht geſtattet worden iſt.

Das Maß der unter unſerer Regierung auszuübenden Gewalt iſt durch die Conſtitution beſtimmt. Die Maximen anderer Regierungen oder die Gebräuche anderer Nationen hier zur Regel zu machen, würde jede Gewaltthat, Tyrannei und Unbill gut heißen. Dies würde vernichten, was von unſern Vätern, die unſere Regierung gründeten, geſchaffen wurde; es macht die Praktiken des Despotismus oder die Grundſätze der Monarchien zu höheren Autoritäten, als die geſchriebene Conſtitution unſerer Republik.

Die ſchrankenloſe, unverantwortliche deſpotiſche Gewalt, welche unter dem Kriegsrecht beanſprucht wird, iſt ſchon an und für ſich ein Grund, warum daſſelbe nicht ſtatthaft iſt. Der Umſtand, daß es mit dem Zwecke, dem Geiſte und Sinne unſerer Inſtitutionen im Widerſpruch ſteht, iſt ein ſchlagender, bündiger Beweis gegen den Anſpruch auf die Ausdehnung jenes ſogenannten Kriegsrechtes über ein Landgebiet und über verſchiedene Intereſſen, wie ſie niemals unter deſpotiſchen oder monarchiſchen Regierungen beſtand, aus welchen man die Beiſpiele zu deſſen Rechtfertigung zieht.

New-York und andere Staaten willigten nur unter der Bedingung ein, eine General-Regierung zu bilden, wenn die urſprüngliche Conſtitution in der Weiſe amendirt würde, daß die Rechte der Staaten und Bürger vollkommen geſichert wären. Durch das einſtimmige Votum der Staaten wurden die folgenden Artikel hinzugefügt:

„Art. 4. Das Recht des Volkes auf Sicherheit der Perſonen, Häuſer, Papiere und Effekten gegen unbillige Durchſuchungen und Beſchlagnahmen ſoll nicht verletzt werden. Auch ſoll kein Warrant ausgeſtellt werden, der nicht auf wahrſcheinliche Gründe baſirt iſt, unterſtützt durch einen Eid oder eine Beſtätigung, und in welchem der Ort, in dem die Nachſuchung angeſtellt, ſo wie die Perſon, welche verhaftet, und die Gegenſtände, welche weggenommen werden ſollen, genau beſchrieben ſein müſſen.

„Art. 5. Niemand ſoll wegen eines Kapital- oder eines anderen infamen Verbrechens zur Verantwortung gezogen werden, es ſei denn auf Grund einer Vorſtellung oder einer Anklageſchrift einer Grand-Jury, ausgenommen bei den Land- und Seetruppen, ſowie bei der Miliz, wenn dieſelben ſich in Kriegszeiten oder bei einer öffentlichen Gefahr im aktiven Dienſt befinden; ...... auch nicht des Lebens, der Freiheit und des Eigenthums beraubt werden, ohne ein regelmäßiges Gerichtsverfahren.“

Daß dieſe beſchränkenden Beſtimmungen ſich nicht im Original-Dokument befanden, gefährdete deſſen Annahme. Um die öffentliche Stimme zu befriedigen, ſetzte man dieſelben hinein. Man ſagt uns jetzt, daß ſie in keinem Theile unſeres Landes von Werth ſeien, wenn die Executive es für paſſend halte, zu erklären, daß in irgend einem Theile des Landes Krieg oder Aufſtand ſtattfinde. Eine ſolche Anmaßung ſteht im Widerſpruch mit der deutlichen Sprache dieſer Beſtimmungen und mit deren feſtgeſtellter geſetzlicher Wirkung. Wenn es möglich wäre, ſie verſchieden auszulegen, ſo ſchreibt unſere Conſtitution vor, wie eine Entſcheidung zu erlangen iſt. Die Fragen werden vor die geeigneten Gerichtshöfe gebracht werden, und wenn die Theorie vom Kriegsgeſetz von denſelben aufrecht erhalten wird, ſo werden wir uns darin fügen und unſere Conſtitution amendiren laſſen. Wenn die Theorie aber unbegründet iſt, ſo muß ſie aufgegeben werden.

Unſeren Vätern waren die conſtitutionellen Rechte ſo heilig, daß ſie dieſelben ſelbſt für die Majorität des Volkes unantaſtbar machten. Geſchriebene Conſtitutionen werden gemacht, nicht nur um die Wünſche der Majoritäten zu erfüllen, ſondern auch die Macht der letzteren einzuſchränken und die Rechte der Minoritäten zu beſchützen. Sie geben dem einfachſten Bürger das Recht der Religionsfreiheit gegenüber der ganzen Gewalt eines Volkes. So groß auch die Majorität ſein mag, ſie darf die Sicherheit der Perſon und des Eigenthums, ſo wie die Gewiſſensfreiheit nicht beſchränken.

Der Präſident ſelbſt beſitzt ſein Amt nicht durch den Willen der Majorität, ſondern kraft der Beſtimmungen der Conſtitution, welche ihn mit 1,800,000 Stimmen in das Amt einſetzte, gegen 2,800,000 Stimmen, welche unter ſich nicht einig waren über die opponirenden Candidaten. Er behält ſein Amt mit Recht, obgleich die Majorität des Volkes, ſelbſt in dem Staate, welcher ihn in daſſelbe einſetzte, in den letzten Wahlen erklärt hat, daß ſie politiſch gegen ſeine Adminiſtration iſt. Die Majorität iſt immer noch verpflichtet, deſſen conſtitutionelle Rechte zu achten, ſeine Befugniſſe anzuerkennen, und ſeine innerhalb der Grenzen rechtmäßiger Autorität ausgeübten Handlungen zu unterſtützen.

Die Rechte der Staaten wurden reſervirt, und die Befugniſſe der General-Regierung wurden beſchränkt, um das Volk in Zeiten von Gefahr und bürgerlicher Aufregung in ſeiner Perſon ſo wie in ſeinem Eigenthum zu ſchützen. In Zeiten des Friedens und der Prosperität iſt keine Urſache zu Beſorgniſſen vorhanden. Wenn unſer Staatsweſen uns keinen Schutz gewährt in Perioden der Aufregung und Unruhen, ſo iſt daſſelbe ein verfehltes. Wenn die Proclamationen eines Präſidenten über den Entſcheidungen eines Gerichtshofes ſtehen, und über den einſchränkenden Beſtimmungen der Conſtitution, ſo iſt die Conſtitution nur Blendwerk. Wenn ſie nicht die Autorität hat, die Executive innerhalb ihrer Schranken zu halten, ſo kann ſie auch nicht die Staaten in der Union zurückhalten. Diejenigen, welche behaupten, daß die Conſtitution nichts Geheiligtes ſei, müſſen auch zugeben, die Rebellion ſei nichts Verwerfliches.

Wir können hierzu nicht ſtill ſein und dadurch zugeben, daß ſolche Schritte zu Präcedenzfällen werden. Durch dieſelben wird unſere Conſtitution eben ſo verletzt, wie durch die Rebellion, und ſie ſind noch gefährlicher für unſere Freiheiten. Es liegt darin für den Ehrgeiz der Executive die Verſuchung, Krieg zu führen und in die Länge zu ziehen. Sie bieten die Ausübung despotiſcher Gewalt als den Preis für Verhinderung des Friedens an. Sie ſind Verlockungen für eine jede Adminiſtration, Uneinigkeit hervorzurufen und zu bewaffnetem Widerſtand gegen das Geſetz zu reizen, indem ſie erklärt, daß der Kriegszuſtand alle conſtitutionellen Beſchränkungen aufhebe. Sie rufen Horden grundſatzloſer Leute nach dem National-Capitol, welche in dem Untergange ihres Landes eine Gelegenheit finden, ihre Habſucht und ihren Ehrgeiz, ſowie perſönliche oder politiſche Leidenſchaft zu befriedigen. Durch dieſe Theorie geräth das Streben und der Ehrgeiz der Adminiſtration in Gegenſatz zu den Intereſſen und dem Glück des Volkes. Sie macht die Wiederherſtellung des Friedens zur Niederlegung einer mehr als königlichen Autorität Seitens derer, welchen die Regierung des Landes anvertraut iſt.

Ganz derſelben Natur iſt die kürzlich veröffentlichte Emancipations-Proklamation. Der Präſident hat bereits ein Congreß-Geſetz unterzeichnet, welches verfügt, daß die Sklaven derer, welche ſich in Rebellion befinden, confiscirt ſeien. Die einzige Wirkung dieſer Proklamation iſt deshalb, die Emancipation der Sklaven derer zu erklären, welche ſich nicht in Rebellion befinden und deshalb loyale Bürger ſind. Es iſt eine außergewöhnliche

Ableitung von der angeblichen Kriegsgewalt, daß eine Rechtsentziehung zum Nachtheile loyaler Bürger und die Belegung derſelben mit der gleichen Strafe, welche die Inſurgenten trifft, geeignet ſei, den glücklichen Erfolg des Krieges zu fördern, die Conſtitution aufrecht zu erhalten und die Union wieder herzuſtellen. Diejenige Klaſſe loyaler Bürger, welche der Fahne des Landes treu blieben, hat vor Allem Anſpruch auf den Schutz der Regierung. Und doch iſt dieſe Proklamation einzig und allein gegen ſie gerichtet. Wird nicht die Welt dieſe ſo unpolitiſche, ungerechte und unconſtitutionelle Maßregel, geeignet, der Wiederherſtellung der Union viele Hinderniſſe in den Weg zu ſchieben, als ein Aufgeben der Hoffnung und der Abſicht, ſie wieder herzuſtellen, auslegen, — ein Reſultat, welchem der Staat New-York unabänderlich entgegen iſt und dem er kräftig Widerſtand leiſten wird?

Wir müſſen nicht blos die Conſtitution der Ver. Staaten unterſtützen und die Rechte der Staaten wahren, ſondern auch die Union wieder herſtellen, wie ſie vor dem Ausbruch des Krieges war. Die Behauptung, daß dieſer Krieg das unvermeidliche Reſultat der Sklaverei ſei, iſt nicht blos irrig, ſondern hat in ihrer Befolgung zu einer verhängnißvollen Politik geführt. Die Anſicht, daß die Sklaverei abgeſchafft werden müſſe, um die Union wieder herzuſtellen, bewirkt einen Antagonismus zwiſchen den freien und den Sklavenſtaaten, der nicht exiſtiren ſollte. Wenn es wahr iſt, daß die Sklaverei durch die Bundes-Regierung abgeſchafft werden muß; daß der Süden militäriſch unterworfen werden muß; daß vier Mill. Neger auf die Dauer vieler Jahre auf Staatskoſten unter der direkten Aufſicht der Behörden in Waſhington gehalten werden müſſen, dann müſſen wir in der That die Vernichtung unſerer Armeen im Felde, eine noch ſtärkere Beladung des Volkes und eine noch größere Schuldenlaſt erwarten. Wir müſſen unſer Staatsweſen in einen Militär-Despotismus umwandeln. Die unheilvolle Anſicht, daß in dieſem Kampfe der Norden den Süden unterjochen und ruiniren müſſe, um unſere Union zu retten, hat die Hoffnung unſerer eigenen Bürger geſchwächt, und im Ausland das Vertrauen auf unſern Erfolg zerſtört.

Die centralen und weſtlichen Staaten.

Es iſt eine bedeutungsvolle Thatſache, welche Belehrung und Hoffnung für die Zukunft gewährt, daß die Theorien, welche einen ſchlimmen Einfluß auf unſere nationale Politik ausgeübt haben, nicht in dem Theile entſprangen, welcher das Herz der Union genannt werden kann, unter den miteinander vertrauten und wohlbekannten Bevölkerungen der centralen und weſtlichen Staaten, wo die Staaten, welche die Sklaverei erlauben und verbieten, in thatſächlicher Berührung ſtehen, noch auch in den Theilen, die von den großen öſtlichen und weſtlichen Handels- und Verkehrslinien durchzogen werden. Jene Theorien ſind faſt ganz und gar in zwei Sectionen entwickelt worden, welche durch Lage, Traditionen und eigenthümliche Denkweiſen verhältnißmäßig iſolirt und mit der gleichartigern Maſſe unſeres Volkes am wenigſten verknüpft ſind. Es hat extreme nordiſche Anſichten und extreme ſüdliche Anſichten gegeben; aber auch die freiern und duldſamern Anſichten der volkreichern Staaten der Mitte und des Weſtens. Dieſe erſtrecken ſich auf beide Seiten jener ausgezackten Grenzlinie zwiſchen „Sklaven-“ und „freien“ Staaten, welches nicht eine Linie ſich bekämpfender Meinungen, ſondern ſich vermiſchender Intereſſen iſt. Ihre Ebenen ſind durch zuſammenſtrömende Flüſſe verſchlungen und nicht durch Gebirgsreihen getrennt.

Dieſe Staaten ſind eine Gegend Eintracht bewirkender Anſichten und Sympathieen. Sie ſind nicht nur durch eigenthümliche Intereſſen, ſondern auch durch ſtarke Gründe aneinander gekettet, um einer Trennung auf jener Grenzlinie zu widerſtehen, die ſie zu Grenzſtaaten machen würde, was ihren herzlichen Verkehr durch feindſelige Beziehungen erſetzen und ihnen die größten und ſchreiendſten Uebel der Trennung ſämmtlich aufbürden würde. Während ſie ſo nicht die Leidenſchaften und Vorurtheile jener extremen Staaten theilten, welche ſie in den Streit zu verwickeln ſtrebten, haben ſie Beweggründe des höchſten Intereſſes, die alte Ordnung der Dinge wiederherzuſtellen, und haben das Schlimmſte von einer Trennung zu befürchten. Dieſer Krieg erſtickt und vernichtet die Hoffnungen und das Glück dieſer Gegend, während die Landestheile, deren Leidenſchaften und Intereſſen ihn entzündeten, der Hauptſache nach von den ſchrecklichen Leiden, die er verurſacht hat, entlegen ſind.

Die weſtlichen und centralen Staaten betheiligten ſich mit Wärme an einem Krieg für die Union und Conſtitution. Die nördliche Reihe der „Sklavenſtaaten“ (Oſtvirginien ausgenommen) unterſtützte eifrig die Regierung in ihrer Politik, ſo lange dieſe mit jenem Zweck verträglich war, welche als die „Politik der Grenzſtaaten“ bekannt war. Sowohl die Adminiſtration, als auch der Congreß erklärten damals, ihr einziger Vorſatz ſei, die Union wiederherzuſtellen und die Conſtitution aufrecht zu erhalten. Als die Adminiſtration dieſe Politik fallen ließ und die Anſichten extremer nordiſcher Staaten aufnahm, büßte ſie bei der neulichen Wahl faſt die ganze politiſche Unterſtützung ein, welche die centralen und weſtlichen Staaten in den Wahlen von 1860 und 1861 gewährten.

Während der Norden die ſüdlichen Staaten nicht in Unterwerfung halten kann, ohne die Principien unſeres Staatsweſens zu vernichten, können die großen Staaten der Mitte und des Weſtens die zwei Extreme controliren.

Sie werden die Anſichten von Keinem der beiden als ſichere Führer in der Leitung der öffentlicher Anſichten annehmen. Dies wird durch die politiſche Geſchichte unſeres Landes während der vier letzten Jahre bewieſen. Als man glaubte, daß die vorige Adminiſtration von den Anſichten der Golfſtaaten geleitet würde, verlor ſie ihre Macht in der centralen und weſtlichen Gegend. Die opponirende Partei war, um die öffentliche Unterſtützung zu gewinnen, genöthigt, durch Zuſicherungen und Beſchlüſſe die Anſchuldigung zurückzuweiſen, daß ſie in die Sklaverei in den Staaten ſich einmiſchen würde, und ſie ſchalt als ungerecht die Behauptung, daß ſie die Anſichten der Abolitioniſten des äußerſten nordiſchen Landestheiles theile. Ohne dieſe Zuſicherungen hätte ſie nicht politiſche Macht gewinnen können.

Als die Golfſtaaten ſecedirten, weigerten ſich die centralen Sklavenſtaaten mit großen Mehrheiten, gemeinſame Sache mit ihnen zu machen. Sie ſtrebten, durch die in Waſhington abgehaltene Friedensconferenz Krieg und Trennung zu vermeiden. Unglücklicher Weiſe verwarfen die dominirenden Führer der Partei, welche bei der Wahl von 1860 geſiegt hatte, indem ſie den Umſtand überſahen, daß dies durch ein Votum von ungefähr 1,800,000 gegen eine getheilte Oppoſition von ungefähr 2,800,000 geſchehen war, alle Vergleichs- und Verſöhnungs-Bedingungen als unverträglich mit dem Ergebniß der Wahl, und verſuchten ein aufgewühltes und erſchüttertes Land genau mit den Anſichten und Geſinnungen einer Minorität zu regieren und zu controliren.

Der Ausbruch des Krieges verwickelte unſer geſammtes Land in ſeine Aufregungen. Die Staaten Delaware, Maryland, Kentucky und Miſſouri, ſowie der weſtliche Theil von Virginien hielten feſt an der Union. Der damals von der Adminiſtration kundgegebene und von dem Congreß betheuerte Vorſatz in Betreff der Ziele des Krieges gab der Adminiſtration bei der Wahl im Jahre 1861 überwältigende Mehrheiten in allen loyalen Staaten. Alle betheiligten ſich hoffnungsvoll und vereint an dem Werke, unſere Conſtitution aufrecht zu erhalten und unſere Union in ihrem frühern Zuſtand wiederherzuſtellen. Als dieſe Politik vertauſcht wurde und die Adminiſtration die Geſinnungen der extremen nordiſchen Staaten annahm, die der centralen und weſtlichen Staaten aber bei Seite legte, war eine bemerkenswerthe politiſche Revolution das Ergebniß.

Die Extreme werden nicht triumphiren.

Man hat auch angenommen, daß dieſer Krieg in eine Geltendmachung der Anſichten des einen extremen Theiles unſeres Landes auslaufen werde. Keines wird der Fall ſein, denn für keins von Beiden wird die Unterſtützung einer Mehrheit des Volkes gewonnen werden können. Die großen Central- und die Weſt-Staaten, welche die größte verhältnißmäßige Bevölkerungszahl und die bedeutendſten Hülfsquellen beherbergen, werden keinem dieſer Zwecke ſich anſchließen. Das iſt die Bedeutung der neulichen Wahlen. Es iſt der Entſchluß dieſer Staaten, bei den Rechten der Staaten zu ſtehen, die Rechte der Individuen zu vertheidigen und die Union, wie ſie war, wiederherzuſtellen. Sie wird durch die Central- und durch die Weſt-Staaten, die freien ſowohl wie die ſclavenhaltenden, welche frei ſind von den Leidenſchaften, die an den Extremen des Landes herrſchen, wiederhergeſtellt werden. Es iſt eine hoffnungreiche Thatſache, daß die Vorurtheile zwiſchen nördlichen und ſüdlichen Staaten, da wo beide ſich berühren, nicht vorhanden ſind, ſondern nur in den am weiteſten von einander entfernten Landestheilen. Diejenigen der Central-Staaten, welche die Seceſſions-Ordonnanz verwarfen, in der Union zu verbleiben ſuchten und aus ihr nur durch eine geringſchätzende, unverſöhnliche Politik getrieben worden ſind, müſſen zurückgebracht werden. Die Wiederherſtellung der ganzen Union iſt dann nur noch das Werk der Zeit neben der Anwendung ſolcher Gewalt, welche ſich geltend machen läßt, ohne die Leben und die Schätze des Nordens zwecklos in einem blutigen, beklagenswerthen Kriege aufzuopfern. Wir müſſen unſere Soldaten nicht total herabbringen und preisgeben, noch die Früchte der Arbeit gänzlich erſchöpfen in einem Kriege mit ungewiſſem Ende, oder nach hohlen Theorien jagen. Die Politik der Unterjochung und Ausrottung iſt nicht die Unterwerfung und Vernichtung des Lebens und Eigenthums des Südens allein, ſondern auch die Vergeudung des Blutes und der Schätze des Nordens. Die Ausübung bewaffneter Gewalt muß Hand in Hand gehen mit einer feſten und verſöhnlichen Politik, damit die Wiederherſtellung der Union mit dem möglichſt wenigen Schaden für beide Landestheile erfolgen könne.

Um dieſe Union zu bilden, hat New-York auf eine bedeutende und rechtmäßige Macht im Senat verzichtet. Die Union iſt ein größerer Segen geweſen, als ſelbſt die Hoffnungsvollſten zu ahnen wagten. Um ſie zu erhalten, haben wir die größten Opfer an Blut und Schätzen bereits gebracht. Iſt ſie nicht auch ein Opfer der Leidenſchaft werth? Sollen wir ſie zerreißen laſſen, ohne einen entgegenkommenden Schritt zum Zwecke ihrer Erhaltung? —

Ausgleich der Intereſſen ꝛc.

Die im Norden und Süden, welche damit beſchäftigt ſind, unſere nationale Conſtitution und Union niederzubrechen und zwei Conföderationen zu bilden, überblicken die Thatſache, daß es einer jeden derſelben weit ſchwerer würde, widerſtreitende Intereſſen und die Staatsrepräſentation in Einklang zu einander zu bringen, als in unſerer beſtehenden Union. Die große Ausdehnung unſeres Landes, ſeine verſchiedenartigen Erzeugniſſe und Betriebſamkeit gleichen einen Antagonismus zwiſchen commerziellen, induſtriellen und landwirthſchaftlichen Intereſſen aus. Ein Jeder hat ein großes Feld für lohnende Betriebſamkeit vor ſich. Wenn die weſtlichen Produkten-Staaten von den Märkten des Südens abgeſchnitten ſind, ſo werden ſie auf einer Freihandelspolitik beſtehen, die ihnen die Märkte der Welt öffnet, und ſelbſt dadurch wird der Verluſt nicht ganz ausgeglichen. Sie werden nicht willens ſein, auf ihre beſondern Vorzüge im Getreidebau und der Viehzucht Verzicht zu leiſten, um ſich mit andern Dingen zu beſchäftigen, und die Märkte der öſtlichen Staaten und Europa's können mit den weſtlichen Produkten den Vergleich nicht aushalten. Die beiden letzten Jahre haben den Beweis dafür geliefert.

Bei einer ungewöhnlich ſtarken europäiſchen Nachfrage nach Brodſtoffen und Proviſionen, bei einer außergewöhnlich großen Conſumption dieſer Artikel durch unſere amerikaniſchen Armeen, ſind in einem bedeutenden Theile des Weſtens dieſelben trotzdem auf einem Preiſe, der kaum die Bewirthſchaftungskoſten bezahlt. Bankerott und finanzielle Noth herrſchen inmitten reicher Ernten, und uneingeheimſte Saaten mußten zu Grunde gehen zu einer Periode der bedeutendſten Ausfuhr an Landwirthſchaftsprodukten, von der die Geſchichte unſeres Landes weiß. Die Transportkoſten für den beſſeren Verſchleuß dieſer Produkte zu ermäßigen, würde keine Abhülfe bieten. Den Miſſiſſippi zu öffnen, um einen Weg nach den Märkten der Welt zu haben, würde dem Uebel ebenfalls nicht ſteuern. Die im Miſſiſſippithal gezogene Baumwolle iſt das Wechſelprodukt der Proviſionen des Nordens und der Arbeit des Weſtens. Das Volk des Weſtens muß die Märkte der ſüdweſtlichen Staaten wieder haben, um ſein Gedeihen zurückzubringen. Sie müſſen mit ihm wieder vereinigt ſein politiſch, ſocial und commerciell, bis hinab zum Thale des untern Miſſiſſippi. Ihr Getreide und ihre Proviſionen müſſen in Baumwolle umgewandelt werden, und in dieſer Form mit Vortheil nach den öſtlichen und europäiſchen Häfen gelangen. Wenn ſie dergeſtalt ihre Arbeit entſchädigt erhalten, werden ſie wieder eine Stütze unſerm Handel bieten. Um dieſe weite Region ihrem frühern Gedeihen zurückzugeben und für uns ſelbſt ihren bereichernden Verkehr wieder zu gewinnen, muß das untere Miſſiſſippithal zur Union zurückgebracht werden; es muß zudem zurückgebracht werden mit allen ſeinen Elementen der Produktion und des Reichthums ungeſchmälert, mit allen Vortheilen lokaler Selbſtregierung; nicht ein verwüſtetes, ruinirtes Gebiet unter einer lähmenden, erniedrigenden militäriſchen Oberaufſicht. So enge ſind das obere und das untere Miſſiſſippithal durch das Intereſſe an einander gekettet, daß wenn in Louiſiana Baumwolle verbrannt, in Illinois Welſchkorn als Brennmaterial verwendet wird. Der Ruin des ſüdlichen Conſumenten macht den nördlichen Produzenten bankerott. Wenn der Eine nicht fähig iſt zu kaufen, iſt der Andere gelähmt oder vernichtet als Produzent. Dieſer einzige Beleg, abgeſehen von vielen andern gleich ſtarken, zeigt, daß weder in einer nördlichen, noch in einer ſüdlichen Union die widerſtreitenden Intereſſen der Landwirthſchaft, des Handels und der Manufaktur ihren Ausgleich finden können.

Politiſche Intereſſen ꝛc.

Die Theilung der Union in zwei oder mehr Conföderationen würde in einer jeden jene Fragen der Vertheilung der Gewalt und der Beziehungen zwiſchen den Staaten wieder eröffnen, die durch unſere National-Conſtitution entſchieden worden ſind. Selbſt in dieſem Augenblick verurſacht die Centraliſation der Gewalt und Patronage in der National-Hauptſtadt in jenen Staaten Beſorgniſſe, welche die volkreichſten ſind, oder es bald ſein werden. Der Senat kann den Erlaß oder Widerruf von Geſetzen des Hauſes, das den Willen des Volkes repräſentirt, verhindern, und kann gleichzeitig Verträge, die der Präſident abgeſchloſſen, oder Ernennungen, die er gemacht hat, verwerfen. In dieſem Augenblick nimmt es der Senat auf ſich, die Organiſation des Exekutiv-Departements zu diktiren. Dieſer Körper hat ferner den Vortheil einer längern Amtsdauer ſeiner Mitglieder, und ſteht der Controle durch das Volk ferner. Es iſt in dieſem mächtigen Zweige der Regierung, wo die Staaten eine gleiche Vertretung ohne Rückſicht auf ihre Bevölkerung.

Selbſt unter unſerer gegenwärtigen Union liegt es im Intereſſe der kleinen Staaten, möglichſt viel Gewalt in der National-Regierung zu centraliſiren, da ſie eine unverhältnißmäßig große Controle in dem einflußreichſten Zweige dieſer Regierung ausüben. Alle haben mit dieſem Compromiß der Conſtitution ſich einverſtanden erklärt. Es iſt die beſte Auseinanderſetzung oder Einverſtändniß, ſo zwiſchen den größern und kleinern Staaten getroffen werden konnte.

So lange als alle Staaten unſerer gegenwärtigen Union im Congreß vertreten waren, wurde den Nachtheilen dieſes Centraliſationsbeſtrebens (des Uebergewichts der kleineren Staaten) durch den Umſtand vorgebeugt, daß Staaten von ſchwacher Bevölkerung über alle Theile des Landes, und zwar ziemlich gleich in der commerziellen, der ackerbauenden und der induſtriellen Region vertheilt waren. Es kamen darum auch keine nachtheiligen oder

Aergerniß gebenden Reſultate zum Vorſchein. Eine Theilung der Union, oder eine Entrechtung der ſüdlichen Staaten durch die Verwandlung derſelben in bloße Territorien, oder eine durch die Militärgewalt der Regierung geſchaffene Vertretung, würde eine neue Vertheilung oder Ordnung der politiſchen Macht unvermeidlich machen. Wenn die ſüdlichen Staaten losgeriſſen oder entrechtet werden, ſo wird eine jede Karte unſeres Landes beſtändig den Volksſinn auf dieſe Nothwendigkeit hinweiſen. In einer nördlichen Union würde die Gruppe der ſechs kleinen Neu-England-Staaten, nebſt New-Jerſey und Delaware, ſämmtlich an der atlantiſchen Küſte gelegen und weit entfernt von den mittlern und weſtlichen Theilen des Landes, mit einer Geſammtbevölkerung, die eben nur der des einzigen Staates New-York gleichkommt, in dem maßgebenden Zweige der National-Geſetzgebung (dem Senat) die großen Ackerbauſtaaten New-York, Pennſylvania, Ohio, Indiana, Illinois, Michigan, Wisconſin und Jowa zumal balanciren. In wenigen Jahren wird faſt ein jeder dieſer Staaten eine Bevölkerung haben, die größer iſt als die von ganz Neu-England. Der unnatürliche Abſtand in der Vertheilung der politiſchen Macht würde noch dadurch vergrößert werden, daß, während die Neu-England-Staaten auf kleinem Gebiete eine ziemlich gleichmäßige Betriebſamkeit verfolgen, die größern Staaten abweichenden Berufsſphären obliegen, was ein einmüthiges, einverſtandenes Zuſammenſtreben und Zuſammenleben noch erſchweren müßte.

Die Gefahr eines Zwieſpaltes würde noch vermehrt werden durch unſere ungeheure Nationalſchuld. Dieſe hauptſächlich von einigen wenigen der atlantiſchen Staaten gehaltene Schuld würde das Land durch die gefährliche, ſektionelle Beziehung einer Gläubiger- und einer Schuldner-Region noch weiter theilen. Dieſe Schuld kann nicht ſo über unſer Land vertheilt werden, daß dieſelben Gemeinden, welche Steuern bezahlen, auch ein Einkommen vom Schuldkapital haben. Die aus Schutzzöllen entſpringenden Vortheile, ein Reſultat dieſer Schuld, würden vorzugsweiſe von den Gläubiger-Staaten genoſſen werden, neben dem, daß ſie ſich eines unverhältnißmäßig großen Antheiles der politiſchen Macht erfreuen. Die großen Ackerbau-Staaten würden gezwungen ſein, eine ſchwere Steuer an andere Gemeinweſen und zu einer Zeit zu bezahlen, wo die Theilung unſerer Union ſie ihrer beſten Märkte berauben würde; und ſchwere Zölle würden zudem die Nachfrage nach ihren Produkten von Außen verringern. Niemand kann ohne die lebhafteſte Beſorgniß ſolchen Agitationen und Discuſſionen entgegenſehen.

Die kleinern, an der atlantiſchen Küſte gelegenen Staaten waren ſämmtlich urſprüngliche Angehörige der Conſtitution. Sie ſind alle Theilhaber an der Geſchichte des ruhmreichen revolutionären Kampfes. Sie tragen geehrte Namen und haben Erinnerungen, die dem ganzen Lande theuer ſind. Sie ſollten ſich hüten, durch die Thorheit blinder und bigotter Führer um die großen politiſchen Gewalten ſich bringen zu laſſen, die ſie dem Compromiß der Conſtitution verdanken. Sie ſollten nicht in die Schwächung oder Vernichtung jenes Inſtrumentes willigen, das ihnen ganz abſonderliche Vortheile ſichert.

Die Union muß wieder hergeſtellt werden.

Es giebt nur einen Weg, uns vor Demoraliſation, Hader und Bankerott zu bewahren. Unſere Union muß in allen ihren Theilen wieder hergeſtellt werden. Kein Theil derſelben darf über unvermeidliche Kriegsnothwendigkeiten hinaus disorganiſirt werden. Alle müſſen fühlen gemacht werden, daß die mächtigen Anſtrengungen, die wir zur Rettung unſerer Union machen, dem Zweck der Wiederherſtellung des Friedens, Gedeihens und des Wohlbefindens eines jeden Landestheiles entſpringen.

Die Energie des Krieges wird geſteigert werden, wenn der öffentliche Sinn und die Energie des Volkes in dem patriotiſchen, großmüthigen Beſtreben, die Union für das gemeine Beſte aller Theile des Landes wiederherzuſtellen, ſich vereinigen. Sie kann ſo nicht wieder hergeſtellt werden auf irgend einer blutigen, irgend einer barbariſchen, irgend einer revolutionären, oder irgend einer unconſtitutionellen Baſis, wobei es blos auf eine Befriedigung des Haſſes, auf ehrgeizige Parteizwecke, oder ſektionelle Vortheile abgeſehen iſt.

Jede Anwendung von Macht, jeder Einfluß der Ueberredung, jede Verſöhnungs- oder Verſtändigungs-Maßnahme müſſen in Bewegung geſetzt werden, um die Union in ihrer frühern Verfaſſung wiederherzuſtellen. Der ſoll nicht von ſeinem Nachbar fordern, ſein Blut zu vergießen, ſoll nicht verlangen, daß die Früchte der Arbeit unſerer Bürger durch Beſteuerung aufgezehrt werden, um dieſes Ende zu erreichen, dafern er ſich weigert, ſeine eigenen Leidenſchaften abzuſchwören, oder ſeine eigenen Meinungen zu ändern, wenn es gilt, unſer Land zu retten und der furchtbaren Vergeudung von Schätzen und Menſchenleben zu ſteuern. Es denke Keiner, daß das Volk, das ſich weigerte, dieſe Union dem Süden preiszugeben, geſtatten wird, daß nördlicher Fanatismus deren Wiederherſtellung verhindern darf.

Die vorherrſchende Geſinnung in den großen maßgebenden Sektionen unſeres Landes will nicht allein die Union gerettet, ſondern ſie auf eine Weiſe wiederhergeſtellt wiſſen, die in Einklang iſt mit dem Genius unſerer Inſtitutionen, den Gewohnheiten des Volkes und dem Buchſtaben und Geiſte der Conſtitution.

Dieſe Geſinnung wird ſich in der herkömmlichen Weiſe mittelſt Discuſſion und politiſcher Thätigkeit kundgeben. Die Entwerfer unſerer Conſtitution haben in Vorausſicht von Ereigniſſen, welche es für das Volk der verſchiedenen Staaten nothwendig machen dürften, die Regierung zu dieſem Ende nicht nur zu adreſſiren, ſondern auch ein Einverſtändniß in Zweck und Handeln zu erzielen, in der Conſtitution vorgeſehen, „daß der Congreß kein Geſetz erlaſſen ſoll, durch das die Freiheit der Rede oder der Preſſe verkürzt, oder das Recht des Volkes, ſich friedlich zu verſammeln und mittelſt Petitionen die Regierung um Abſtellung von Beſchwerden anzugehen, beeinträchtigt werden kann.“

Unſere gegenwärtige Beſorgniß erregende Lage fordert zu ſolchen Ausſprüchen der öffentlichen Meinung über die Zwecke und den Geiſt dieſes Krieges ganz natürlich heraus; und wenn der öffentliche Wille einmal klar ausgeſprochen iſt, ſo muß er von der Regierung anerkannt und beachtet werden. Dieſer Wille macht ſich ingleichen in unſern häufig wiederkehrenden Wahlen geltend, die in friedlicher Weiſe, aber raſch einen Regierungskörper zuſammenſetzen, der in Einklang iſt mit ihren Zwecken. Ein Einfluß auf die Handlungen des Congreſſes macht ſich dann entweder geltend, oder er führt zu einer Convention der Staaten.

Die Lage unſeres Landes iſt nicht hoffnungslos, es ſei denn, ſie werde es durch Leidenſchaften und Vorurtheile, welche mit der Regierung eines großen Landes unvereinbar ſind. Dieſer Krieg mit allen ſeinen Uebeln hat uns große Wahrheiten gelehrt, die unſer Volk ſich nur zu Herzen nehmen darf, um die künftigen Beziehungen der verſchiedenen Theile unſerer Union auf eine feſtere Grundlage zu ſtellen. Er hat uns den Werth der Union in Betreff unſerer innern, wie unſerer auswärtigen Beziehungen kennen gelernt. Er hat uns eine Weisheit und Kenntniß gegeben in Hinſicht unſer ſelbſt, die wir nur früher hätten beſitzen dürfen, um die gegenwärtigen Calamitäten von uns haben abhalten zu können.

Wenn die Intereſſen unſeres Landes in verſchiedenen Theilen deſſelben in mancher Beziehung auseinander gehen, ſo ſind ſie von Natur aus doch ſo balancirt und gegen einander ausgeglichen, daß ein unwiderſtehlicher Drang zum Verkehr, zur Eintracht und zur Union ſich geltend macht. Dieſer Drang muß am Ende gegenſeitiges Mißverſtändniß beſiegen.

Wir haben durch den Krieg auch die wechſelſeitige große Stärke des Nordens und des Südens kennen gelernt, und inmitten all der durch den Krieg hervorgerufenen bittern Gefühle iſt es doch jedem Theile des Landes eingeprägt worden, die Macht, die Hülfsquellen und den Muth des andern zu achten.

Wir müſſen die Lage der öffentlichen Dinge nehmen, wie ſie iſt. In dieſem Augenblick ſind die Geſchicke des Landes durch die Reſultate der Schlachten beeinflußt. Unſere Armeen im Felde müſſen unterſtützt werden; allen conſtitutionellen Forderungen unſerer General-Regierung muß prompt entſprochen werden. Aber Krieg allein kann die Union nicht retten. Das Verfahren, durch das man eine gewöhnliche Inſurrektion überwältigt, iſt nicht anwendbar in Betreff eines weit verbreiteten bewaffneten Widerſtandes großer Staatsweſen. Es iſt Schwäche und Thorheit, unſere Augen dieſer Wahrheit zu verſchließen.

Unter keinerlei Umſtänden kann in die Theilung der Union gewilligt werden. Wir werden jede Kraftanſtrengung machen; wir werden jede Politik der Verſöhnung in Anwendung bringen; wir werden das Volk des Südens mit allen möglichen Zureden zur Rückkehr in die Union zu beſtimmen ſuchen, die ſich mit der Ehre vertragen; wir werden ihm jedes conſtitutionelle Recht und jede conſtitutionelle Rückſicht garantiren, und nicht minder jene brüderliche Achtung, die in einem gemeinſamen Lande unerläßlich iſt; aber wir können niemals freiwillig in den Aufbruch der Union dieſer Staaten, oder in die Vernichtung der Union willigen.

Indem wir in Demuth unſere Abhängigkeit von der Allmacht Gottes erkennen, unſern Hochmuth, unſere Undankbarkeit und unſern Ungehorſam bereuen, laßt uns beten, daß unſere Seelen mit jener Weisheit, Großmuth, Vertrauen und Nächſtenliebe erfüllt werden, die uns in den Stand ſetzen werden, unſer Land zu retten.

Horatio Seymour.

Albany, 7. Januar 1863.

State of New York.

No. 4.

IN ASSEMBLY,

January 6, 1863.

ANNUAL FINANCIAL REPORT

OF THE AUDITOR OF THE CANAL DEPARTMENT.

STATE OF NEW YORK,
CANAL DEPARTMENT,
ALBANY, *January* 6, 1863.

To the Speaker of the Assembly:

Sir—I herewith transmit to the Legislature, the Annual Financial Report required by law from the Auditor of the Canal Department, containing the accounts and statements of the receipts and payments on account of the canals, and the Canal Fund and debt, during the fiscal year ending on the 30th day of September last.

I am, respectfully, your obedient servant,

N. S. BENTON,
Auditor.

FINANCIAL REPORT OF THE AUDITOR.

STATE OF NEW YORK,
CANAL DEPARTMENT,
ALBANY, *December* 1, 1862.

To the Legislature:

Pursuant to the provisions of the act, chapter 177 of the Laws of 1861, the Auditor herewith submits the annual statements required from this Department by the 14th section of the act, chapter 162 of the Laws of 1848, of the receipts and payments on account of the canals and the canal debt, the balance of the funds on hand and in the treasury, the disposition of the same, and the condition thereof, at the close of the fiscal year ending September 30, 1862.

Document No. 1 is a recapitulation of the several succeeding exhibits, numbered to 65 inclusive, which comprise the annual statements required to be reported to the Legislature at the commencement of each session, showing the general condition of the several funds appropriated by law to the payment of the principal and interest of the canal debt, and of the several funds belonging to the several canals of the State, and appropriated to their maintenance and completion.

It will be the object of the Auditor to submit, in the best way he can, such suggestions as he considers appropriate in respect to the condition of the funds subject to his supervision, and such views in regard to the improvement of the canal revenues as experience and reflection have suggested. In his judgment, no greater improvement can now be made in our canal finances, than to put a stop to wasteful expenditures and the illegal application of the public funds to unauthorized objects of disbursement.

Document No. 1 shows there was in the treasury and invested, belonging to the Canal Fund, on the 30th September, 1861, the sum of	$2,604,621 25
Received during the fiscal year ending on the 30th of September, 1862	7,793,494 37
Total receipts, and available and unavailable balances	$10,398,115 62
Payments during the year, as shown by the tables herewith submitted	5,808,811 79
Leaving a balance on the 30th of September, 1862, of	$4,589,303 83

Of the above balance, there was on deposit in banks, to the credit of the Treasurer of the State, on account of the Canal Fund, as follows, to wit:

In solvent banks, available		$4,070,273 59
In broken banks, unavailable		305,512 46
Total in banks		$4,375,786 05
In the custody of the Auditor, securities invested on account of the Canal Fund, viz:		
Bank Fund stock	$12,743 15	
Canal stocks	176,621 57	
Securities of real estate, Walter Joy's Bank	20,354 06	
Real estate, &c., Bank of Corning	3,799 00	
		213,517 78
		$4,589,303 83
Champlain canal appropriation overdrawn		4,402 66
Total balance, September 30th, 1862		$4,593,706 49

The above amount belongs to the several constitutional Sinking Funds, under article 7, pledged to the payment of the principal and interest of the stock debt of the State, including the sum for the support of the government, the remainder of the canal revenues of the last fiscal year, the Repair Trust Fund, and the available and unavailable balances of the appropriation of the several canals, which are particularly specified in the document above named.

REVENUES OF, AND EXPENDITURES ON, THE CANALS.

Tables No. 40, 41, being condensed, show the following results of the annual revenues of the canals, from all sources other than taxation, during the fiscal year. The expenditures for the same period, on all the canals, for the charges of collection, superintendence and *ordinary* repairs, are also briefly stated. The resources of the State, arising from the canals, are shown by this exhibit.

Receipts during the year:

From tolls collected on all the canals	$4,790,518 09
Rent of surplus waters	6,765 00
Interest on current canal revenues	39,363 49
Miscellaneous receipts	18,343 09
	$4,854,989 67

Payments during the year:

To Canal Commissioners, for repairs	$236,318 16	
To contractors, for repairs	296,168 98	
To superintendents, for repairs	131,919 64	
To collectors, for salaries, clerk hire, pay of inspectors, and expenses of collectors' offices	58,023 35	
To weigh-masters	8,430 85	
For salaries chargeable to annual revenues, refunding tolls, printing and other miscellaneous payments	42,537 34	
		773,398 32
"Surplus revenues,"		$4,081,591 35
Payments to Sinking Fund, Under § 1, art. 7	$1,700,000 00	
Payments to Sinking Fund, Under § 2, art. 7	350,000 00	
Carried forward	$2,500,000 00	$4,081,591 35

Brought forward	$2,050,000 00	$4,081,591 35
Payments to Sinking Fund, Under § 3, art. 7	1,146,242 66	
Payments to the Treasury, Under § 3, art. 7, to defray the expenses of government	200,000 00	
		3,396,242 66
Remainder to be appropriated, &c		$685,348 69

The statements below show the receipts on account of the canals, and the aggregate payments for collection, superintendence and *ordinary* repairs, including the salaries of various officers connected with the canals, except the charges for engineering in enlarging and completing the public works during the four years named.

	1859.	1860.
Receipts from tolls, &c.	$1,859,879 63	$2,416,588 39
Payments to superintendents and contractors of repairs	$629,580 51	$378,285 89
Payments by Canal Commissioners for repairs	155,265 79	231,753 23
Payments to collectors, weighmasters and assistant collectors	69,582 93	96,889 04
Refunding tolls, salaries, &c	43,449 73	40,048 62
Total expenses	$897,878 96	$746,976 78
Net receipts	$962,000 67	$1,669,611 61

	1861.	1862.
Receipts from tolls, &c	$3,402,628 30	$4,854,989 67
Payments by superintendents, and to repair contractors	$367,606 84	$428,088 62
Payments by Canal Commissioners for repairs	224,957 28	236,318 16
Payments to collectors and their assistants, and weigh-masters	70,456 85	66,454 20
Refunding tolls, salaries of officers, &c., &c	43,765 17	42,537 34
Total expenses for the year	$706,786 14	$773,398 32
Net receipts	$2,695,842 16	$4,081,591 35

This comparative statement is brought into this form for the purpose of showing the gross revenue receipts of the canals alone; the payments under four general heads on account of the canals, and the net receipts during four consecutive fiscal years. The net, as well as the gross receipts, are larger than at any former periods since the canals were first completed and opened. The expenses of repairs and collections of the last year, although within the sum appropriated, exceed those of either of the two previous years.

Recapitulation of the Canal Stock Debt, paying interest September 30th, 1862.

	Principal.	Annual Interest.
Under art. 7, sec. 1 of the Constitution	$8,839,024 76	$487,341 48
Under art. 7, sec. 3 of the Constitution	12,000,000 00	710,000 00
Under art. 7, sec. 10 of the Constitution	642,585 49	34,629 28
Under art. 7, sec. 12 of the Constitution	2,500,000 00	150,000 00
	$23,981,610 25	$1,381,970 76

OF THE CANAL DEBT SINKING FUNDS.

Sinking Fund for the redemption of the canal debt, under article 7, section 1 of the Constitution. See tables Nos. 2 and 3 of documents.

1861, September 30th, balance on hand, available and unavailable		$1,809,842 08
Received during the fiscal year, viz:		
Interest on loans and deposits		22,942 24
Transferred from the revenues of the canals, year ending September 30th, 1862		1,700,000 00
		$3,532,784 32
Paid during the year, viz:		
For the redemption of canal stocks	$920,000 00	
For the expenses of the transfer office	2,212 00	
Carried forward	$922,212 00	$3,532,784 32

Brought forward	$922,212 00	$3,532,784 32
For premium on stocks purchased	22 49	
For allowance by Canal Board to Hiram Chapman and others, under the act chapter 157, Laws of 1845	220 00	
Transferred to pay the interest on sundry loans not yet matured	517,230 08	
Transferred to the fund for the payment of sundry appropriations, an advance on the tax of 1862	559,724 77	
		1,999,409 34
Balance on hand September 30th, 1862		$1,533,374 98

The first instalment of the debt that matures under this Sinking Fund is July 1st, 1864, when $400,000 becomes due, and in October following $1,200,000 is redeemable.

Sinking Fund for the redemption of the canal debt, under section 3 of article 7 of the Constitution. See tables Nos. 4 and 5 of documents.

1861, September 30th, balance on hand, available and unavailable		$124,761 53
Received during the fiscal year, viz:		
From General Fund for interest on tax of 1860		41,086 77
Transferred from the taxes of 1860		1,580,742 61
Transferred from the surplus revenues of the canals on the 30th of September, 1862		1,146,242 66
		$2,892,833 57
Paid during the year, viz:		
For redemption of stock due January 1st, 1862	$1,200,000 00	
For interest on loans	728,000 00	
		1,928,000 00
Balance on hand September 30th, 1862		$964,833 57

Included in the above balance as now stated is the sum of $406,242.65, received from the surplus revenues of the canals at the close of the fiscal year covered by this report, which is required by section 3 of article 7 of the Constitution to be set apart and invested for the redemption of the principal of debt when it falls due. There is also included in the above balance the sum of $28,112.03, due from broken banks, which is now and probably ever will be unavailable. Deducting these two sums from the balance on hand at the close of the fiscal year, and there will be a deficiency of $180,478.89 in the fund to pay the interest on the debt. This deficiency will be made good by the receipts from taxes to be collected the current year, under the act, chapter 318, Laws of 1862.

If, however, the State continues to receive its canal tolls, taxes, and other dues, in the paper currency of the country, and to pay the quarterly interest on its stock in specie or coin, it will be very difficult to estimate what the deficiency will be. It may cost from 20 to 40 per cent. in paper currency to convert our treasury funds into specie, and whatever that cost may be, must be added to the existing deficiency, and will consequently increase it.

Sinking Fund for the redemption of the canal debt of $2,500,000, contracted under section 12 of article 7 of the Constitution—see tables Nos. 8 and 9 of documents.

1861, September 30th, balance on hand		$87,500 00
Received during the fiscal year for interest on stocks and taxes		18,045 69
Transferred from the taxes of 1860		118,368 17
Transferred from the taxes of 1861		356,837 43
		$580,751 29
Paid during the year:		
For premium and accrued interest on stocks purchased for investment	$3,996 53	
For interest on loan	150,000 00	
		153,996 53
Balance on hand September 30th, 1862		$426,754 76

The first instalment of stock, $800,000, secured by this Sinking Fund, falls due July 1st, 1866. The payment of the whole loan, called the Floating Debt Loan, principal and interest, is secured by an irrepealable annual tax levy. Of the above balance $276,754.76 are set apart and invested to pay the principal maturing in 1866. The four annual tax levies, including the one made the current year, will enable the fund to pay promptly all charges upon it.

The Repair Trust Fund.

By the provisions of the act, chapter 177 of the Laws of 1861, this fund is placed under the control and management of the Commissioners of the Canal Fund. It is made up of sums deposited by parties to whom contracts for keeping the canals in repair have been awarded, as security for the faithful performance of their contracts. The fund is invested in State stocks and in loans to banks. If the depositor fails in the performance of his contract, the deposit is forfeited to the State and is credited to the Canal Fund, and if he performs his contract, the deposit with the accumulations of interest is paid to the contractor at the expiration of three months from the termination of the contract.

On the 30th of September, 1861, the principal of the fund was	$63,000 00
Increase of principal of the fund during the year,	36,931 63
	$99,931 63
Diminution of principal during the year	6,430 41
1862, September 30, principal of the fund invested,	$93,501 22

Besides the accumulations of interest which are added to the principal at the close of each six months the loan is held. When re-invested, the accumulations are added to the original deposit and loaned as principal.

WHERE ARE THE STOCKS HELD.

Of this debt, paying interest, on the 30th day of September, 1862, there was held

On United States account	$22,528,782 89
On foreign account	1,452,827 36
	$23,981,610 25

A statement has been prepared and is now presented which shows the amount of canal stocks held on the 1st day of July, 1862, by the banks, savings banks, and insurance companies in this State.

The amount of these stocks now held on foreign and domestic account, by persons, parties, and corporations, other than those named in the statement, may be set down at $3,919,081.12, but it is probable some of it has been transferred to the Banking Department since July last.

Statement of New York State Canal Stock held by Banking and Insurance Corporations in the State of New York.

By whom held.	Amount.	In't. per annum.
Banks 5's	$5,200,106 13	$260,005 31
do 6's	11,094,656 00	665,679 36
do 7's	225,000 00	15,750 00
	$16,519,762 13	$941,434 67
Savings Banks 5's	$445,667 00	$22,283 35
do 6's	2,060,700 00	123,642 00
do 7's	104,000 00	7,280 00
	$2,610,367 00	$153,205 35
Insurance Companies 5's	$152,400 00	$7,620 00
do 6's	220,000 00	13,200 00
do 7's	570,000 00	39,900 00
	$942,400 00	$60,720 00
	$20,072,529 13	$1,155,360 02

On the 1st of October, 1862, the Superintendent of the Bank Department held $19,022,890.10 of the General Fund and canal stock debt.

OF SPECIE PAYMENTS.

This State has always maintained a high character and an untarnished credit, by promptly meeting her public obligations, under all or any circumstances and vicissitudes, prosperous or adverse, in *money* or its equivalent.

As soon as the fact of a specie suspension became probable, in December, 1861, measures were taken by the Auditor, under the directions of the then Commissioners of the Canal Fund, to place funds with the Manhattan Company to pay all the interest and $1,200,000 of the principal of the canal stock debt, falling due in January, 1862, in coin; and before the first day of January further specie funds were placed at the disposal of said company, to pay the principal and interest of $900,000 of canal stock maturing on the first of June, 1862.

The present Commissioners of the Canal Fund, as is well known, on their accession to office resolved to continue this policy, and with a view of paying the quarterly interest falling due in April last in specie or coin, appealed to the State banks holding the canal deposits of 1861 for a contribution in gold to meet this payment. The appeal was responded to by nearly all the banks, with alacrity, and the gold was furnished. There were some banks, however, which held considerable amounts of these stocks that refused to contribute, whose quarterly interest then was and since has been paid in coin. By the directions of the Commissioners of the Canal Fund, American gold was purchased by the New York agency, at 9¾ per cent. premium for paper currency, to pay the July interest, and a like purchase was made, in bank funds, at 23¼ per cent. premium, to pay the October interest. These purchases have been made at a cost of $113,559.55. No warrants have yet been drawn on the Treasurer to reimburse the agency for these purchases, and cannot be, without overdrawing the specific appropriations made by the Legislature. If the interest for the January quarter is paid in gold, a further expense of $104,547.80 will be incurred, if the average of gold above paper, or paper below gold, that ruled through November shall continue to that time. It probably will, and we can have but little doubt there will be a further and a greater depression of our paper circulation than has been known in the country for fifty years. We have no contingent appropriations to resort to in cases like the present. It is better that we should not have any, for now the subject must be brought before the Legislature, and its sanction obtained.

In 1863 and 1864 there will fall due of the principal of the canal stock debt	$1,800,000	00
Two years' quarterly interest	2,763,921	52
Total amount of principal and interest	$4,563,921	53
Add for depreciation of paper currency 30 per cent	1,369,176	45
Amount required in currency	$5,933,097	98

This sum will vibrate as the rate of discount rises and falls.

The tolls and other canal dues are not paid in gold and silver, but in the bankable currency of the State. Can we, in the face of an Act of Congress, which authorizes the issue of legal-tender treasury notes, which are equal in value to our own State bank paper and no more, exact payment of our State dues in gold and silver?

But let us see the effect of continuing the payment of the interest on our State debt in coin. The banks of issue, the Savings banks and insurance corporations, as may be seen by a reference to the foregoing table, will be the recipients of $1,155,360 in gold every year, while the expense to the treasury will not be less than $346,608 annually, at 30 per cent., and may largely exceed that sum. The State cannot demand and enforce payment of its deposits held by the banks, in gold and silver coin, so long as Treasury notes, by a law of Congress, are a legal tender in payment of debts. In what respect then is any obligation of duty violated or a proper regard for our State credit overlooked, if we say to these banks, you must take your quarterly interest in your own currency dealt out to the community, and which is paid into the State treasury for the dues of the State? If this suspension had arisen from a temporary commercial revulsion, or from any overt act of our State banks, or from any other causes that might be remedied or corrected by State legislation, the Auditor would not be found suggesting excuses even for a temporary and exceptional departure from a rule of conduct that has placed the credit of the State equal, if not above, that of any other in the Union. He deems it his duty to say he cannot see the justice, expediency, or propriety of imposing burthens on the whole people, where all the benefits to result from those impositions, or nearly all of them, will be exclusively enjoyed by the stockholders of corporations, who have no right to make these exactions, nor any claim upon the State to be peculiarly favored.

As a member of the Federal Union, it is no doubt our duty as a State to see to it that no foreign holder of our stocks shall suffer the least pecuniary harm in consequence of the deranged condition of our national and State finances. Casuists may ask wherein consists the difference between a domestic and foreign creditor? My answer is, this is not a case of conscience, but one of policy and compulsion. Why do we pay one class of our State creditors and State indebtedness in paper and another in gold and silver coin? Our own State banks, holding thirty-five millions of specie in their vaults, have no right to ask, and the Auditor assumes they do not ask, to have their quarterly interest paid in coin while they discharge their own obligations in paper currency. Neither these institutions nor any other within our State have any just claim of right to be exempted from the evils, hardships, or inconveniences common to our whole community, and much less can they, with the least semblance of reason, ask or expect to make a profit from the imposition of burthens upon the non-stockholding citizens of the State.

FLOATING DEBT, LOAN AND TAX.

The fourth section of the act chapter 271, of the Laws of 1859, which provided for a loan of $2,500,000, to pay the floating debt of the State, authorized and directed the levy of an annual tax sufficient to pay the interest and redeem the principal of the loan authorized, within eighteen years from the time it was contracted. This loan is reimbursable in three instalments, as follows: $800,000 July 1, 1866; $800,000 July 1, 1872, and $900,000 December 1, 1877. The tax must be annual, and the levy for the reimbursement of the principal must be pro rata for the whole period of eighteen years, so that on the 1st day of July, 1866, the Sinking Fund will have accumulated, from these annual taxes, or from other sources, a capital of $800,000 to pay this debt. The payment cannot be postponed. This Sinking Fund, at the close of the fiscal year, amounted to $276,754.76.

The fifth section of this act declares that the fourth section, "imposing the tax, may be repealed whenever the revenues of the canals, after meeting all the present constitutional charges upon them, shall amount to enough to form a Sinking Fund sufficient to pay the interest and redeem the principal of all loans within eighteen years, mentioned in the first section" of the act. Assuming the language used, means the yearly "revenues of the canals;" the prior annual "constitutional charges upon those revenues were $3,366,242.65 a year, exclusive of the appropriation for superintendence, collection, and ordinary repairs." The annual contribution for this Floating Debt Sinking Fund is, by the said fifth section, made a charge upon the "remainder" of the "surplus revenues," mentioned in the third section of the seventh article of the Constitution. Until the close of the last fiscal year, the canal revenues have not, since the above act was approved by the people, yielded any surplus or remainder over the constitutional charges upon them, when the law went into effect. The present year is an exception, and it may be the only one until after 1866. This law, having been approved by the people under the constitutional sanctions, and in accordance with the provisions of the 12th section of the 7th article, is fundamental and irrepealable. The provisions of the repealing fifth section are in direct conflict with those of the 12th section of article 7, which declare that "the tax imposed by such act, in proportion to the debt and liability which may have been contracted, in pursuance of such law, shall remain in force and be irrepealable, and be annually collected, until the proceeds thereof shall have made the provision hereinbefore specified, to pay and discharge the interest and principal of such debt and liability." The power to repeal, conferred, or seemingly conferred, by the fifth section of the act, it was supposed, might be exerted on the happening of an event which is not named in or contemplated by the said 12th section. We have a remainder the present year, but the next and thereafter we may not have a surplus sufficient to meet all the prior constitutional charges upon the revenues under the second and third sections of the 7th article. The bidders for the loan were, undoubtedly, induced to pay high premiums for the stock in consequence of the constitutional guarantee of an annual tax levy for the payment of interest and its ultimate redemption.

CANAL LOANS CONTRACTED UNDER § 10, ART. 7, OF THE CONSTITUTION.

The aggregate of these loans, the interest of which is paid out of the General Fund, is $642,585.49, and is composed of the following specific debts, redeemable as stated below:

Temporary loan, bearing 5 per cent. interest. Redeemable October 1, 1863	$200,000 00
Loan to provide for extraordinary repairs, &c., bearing 6 per cent. interest. Redeemable July 1, 1865	50,000 00
Albany basin loan, bearing 5 per cent. interest. Redeemable July 1, 1866	192,585 49
Enlargement of locks on Oswego canal, loan bearing 6 per cent. interest. Redeemable July 1, 1866	200,000 00
	$642,585 49

Annual interest, $34,629.28.

These loans were contracted after 1846, on the faith and credit of the State, and not on that of the canals or the Canal Funds. When the three last loans were made, the times of payment were fixed at periods when the canal stock debt of 1846, it was believed, would be reimbursed by the operation of the Sinking Fund under section 1 of the 7th article. These expectations have not been realized, and cannot be, with the full annual contribution of $1,700,000, until after 1867. These debts must be paid as they mature, and they ought to be reimbursed from the canal tolls, together with the interest that has been advanced from the General Fund. The injustice of a direct tax levy upon the people of the State to liquidate these stocks is so plain and apparent, that no argument of mine can make the subject more clear. The enlargement and completion of the canals as contemplated by section 3, article 7 of the Constitution, are finished, and have been so declared by statute, and any remainder, therefore, of the canal revenues, after satisfying the pledges of the Constitution in regard to the Sinking Funds, may be disposed of in such manner as the Legislature may direct. Should those remainders hereafter be sufficient to pay these loans, they may be reimbursed from those sources, and if not, then the means therefor must be raised by taxation. The remainder of the surplus canal revenues at the close of the last fiscal year is ample to redeem the temporary loan of $200,000, due in October, 1863, and reimburse the treasury for all advances of interest on account of it. If the whole of that remainder be appropriated to other objects, then we shall have no other resort than the General Fund to pay that debt. The Auditor will not for one moment believe that this policy will receive the favorable consideration of the Legislature in the present perilous condition of the country. The situation of our public works is such, that with moderate expenditures for improvements where most needed, they will meet all the calls made upon them as lines of traffic for some years to come, and, at any rate, until we can get rid of some of our burthens, and relieve our canal revenues from the onerous charges of interest by the cancellation of our public obligations as fast as they mature. Surely our lot and portion in a public debt, though not of State creation, ought to satisfy the most clamorous lovers of blessings of this sort, without superadding an extension or continuance of our own.

OF THE RATES OF TOLL ON THE CANALS.

The annual adjustment of the rates of toll has of late years been one of the most difficult and disturbing questions brought before the Canal Board to be disposed of. At one time the notion or opinion seemed to prevail that we must, to encourage commerce and promote traffic on the canals, take off the tolls entirely, or reduce the rates to such a figure as would yield only enough revenue to pay the expenses of collection, superintendence, and repairs. This was so clearly a violation of the good faith of the State, and such a manifest infraction of our constitutional obligations, that public alarm began to appear, and thinking men inquired whither are we drifting. Enough had been done, however, in this direction to drive down the gross tolls $3,376,511 below the receipts of 1862.

The reactionary movement on the toll sheet commenced in the spring of 1860. In January of that year several new members came into the Canal Board, who not only believed in the policy of adjusting the rates of toll on the canals for the purpose of revenue, but were ready and willing to carry that policy into full effect. The Comptroller, Treasurer, and Attorney General were of these new members. The only question was the extent to which the revision should be carried. Would it be safe to restore the full rates of 1857 at once or approach that object by degrees. The canals had got into bad repute with shippers and forwarders by reason of the breaks and detentions of the three preceding years; the enlargements had not been fully completed, and although completion had been promised each succeeding year for several years, the accomplished fact had not arrived. The railway competition, eminently hurtful to the roads as well as to the State, was active, persistent and unrebuked, and the full extent of the traffic of 1860 was not realized until midsummer of that year. For these reasons the revision of the toll sheet in 1860 was not extended to all the articles on which reduction had been made in 1858 and 1859. Enough was done to test the question whether the rates were above or below a revenue standard. The rates on merchandise, and mineral coal, and a few minor articles, were raised one hundred per cent. In other cases the rates were put up from twenty to fifty per cent., and in every instance but two there was no falling off in tonnage of the articles on which the rates had been raised, but there was an actual increase in the tons carried.

The rates on wheat, flour, corn and corn meal were not changed from the figures they stood at in 1859 by the toll sheet of 1860. In the latter year "vegetable food," of which the above-named articles were more than three-fourths of the entire quantity, was 35.68 per cent. of the entire tonnage moved on the canals, and paid 52.31 per cent. of all the tolls received during the season of navigation.

In the revision of the toll sheet in 1861, the rates on wheat, flour, corn and corn meal were raised twenty per cent. above those of 1859 and '60, and this action of the Canal Board has been attended with results highly beneficial to the canal revenues, as will be seen in the statement below. These additions to the rates of 1859 have not in any respect affected adversely the aggregate traffic on the canals, or the traffic in those commodities on which the rates have been changed.

This statement explains more distinctly, perhaps, the views of the Auditor in the foregoing remarks, and shows particularly the amount of tolls received on each class of property transported in consequence of the additional rates imposed, above mentioned.

Amount of tolls received on increased rates in

	1860.	1861.
On the products of the forest	$32,462 00	$12,390 00
The products of animals	21,566 00	3,960 00
Vegetable food	57,268 00	561,296 00
Manufactures	4,420 00	4,048 00
Merchandise	111,942 00	53,929 00
Mineral coal	30,376 00	56,077 00
Stone, lime and clay	845 00	5,960 00
Sundries		25,453 00
	$258,879 00	$723,113 00

The further revision that was made in the winter of 1862, the effects of which have thus far been felt, by the addition of more than one million of receipts over those of 1861, cannot be further elucidated until the close of navigation, when they will be given in the next report on tolls, trade and tonnage of the canals.

In 1861, the property classed as "vegetable food" was 47.08 per cent. of the whole tonnage movement on the canals, and paid 73.09 per cent. of all the tolls.

The statement below shows the total movement, or quantities in tons, of property carried on the canals, during the season of navigation in each year named, and the tolls paid thereon:

Years.	Tons.	Tolls.
In 1857	3,344,061	$2,045,641
1858	3,665,192	2,110,754
1859	3,781,684	1,723,945
1860	4,650,214	3,009,597
1861	4,507,635	3,908,785

Comparing 1858 with 1857, we have a gain of 321,131 tons and $65,113 in tolls. Under the rates of 1857, the increased toll receipts on this increased tonnage would have been $183,044.67, instead of the sum above named. Comparing 1859 with 1858, we have an increase of 126,492 tons, and loss in tolls of $386,808. Instead of this loss we might have had a gain on this increased tonnage, under the rates of 1857, of $72,100.44, making a difference of $458,908.44. When we reduce the rate of toll 20 per cent. on a given article, if we do not thereby increase the quantity carried more than 25 per cent., we do not gain anything by the operation. For this reason alone, if there were no other, these indiscriminate reductions on whole classes of property are most hazardous, if we desire to keep up the revenue to a particular standard. If the design be to render the canals worthless, to forward some speculative object, a more effectual method of accomplishing it cannot be devised. It will be done under the guise of promoting trade and keeping business on the canals.

Comparing 1860 with 1859, we find an increase of 868,530 in tons carried, and $1,285,652 in tolls. Of this increase, $258,879 accrued by the additions to the rates made in the toll sheet of 1860, and the residue from the increased tonnage, and the change in the transit to tidewater from a short to a long route.

Comparing 1861 with 1860, we find a loss of 142,579 in tons carried and a gain of $899,188 in tolls; of this gain $723,113 must be credited to the additional rates imposed by the toll sheet of 1861, and the residue to the increased tonnage in 1861 over 1860 in vegetable food. In submitting the above facts, the Auditor has said all he designed or desires now to submit on this subject. He does not consider it advisable to suggest any material changes or modifications in the present rates of toll on the canals. He deems it not impertinent, however, to remark, that a state of things may arise when it may become an imperative duty to modify and change the tariff of tolls, and that those modifications and changes be extended so far as to embrace discriminations.

COST OF TRANSPORTATION ON THE CANALS.

It has been asserted that the Canal Board, in restoring the rates of toll on the canals to those of 1857, had been governed to some extent, if not entirely, by the fact that the free navigation of the Mississippi river and other southern lines of transportation had been obstructed, which would compel a resort to the eastern and northern lines of transportation, to reach the Atlantic seaboard from the western and northwestern States. These considerations could not have had any weight in 1860 and 1861, when the toll sheets for those seasons were adopted, for there was not then any interruption to the navigation of the Mississippi, and none was contemplated; nor had there then been any rebel raids upon the line of the Baltimore and Ohio railroad.

The rates of 1857 were those adopted in 1852 on eastern bound freights, the products of the western States, which had been fixed in reference to the railway competition in our own State. As stated in another part of this report, the rates of 1852 and 1857 had been very much reduced in 1858 and 1859, and the policy of the present as well as the preceding Canal Board has been simply to bring back the rates as near as practicable to the rates of 1857. While the rates on many articles of western production are still below those of 1857, the toll on corn and corn meal was raised in 1861 equal to one cent a bushel on 345 miles of canal, from Buffalo to tide-water. Our rates on non-enumerated agricultural productions stand reduced one-fourth from those of 1857, and on all westward bound freights, consisting of merchandise and non-enumerated articles, the present rates are fifty per cent. below.

Our canals have not, for years, taken any freight from or carried any to the valley of the Ohio river, or the States south of that river, or if any, the quantity has been very small. All the transportation traffic in that direction, when it comes this way, is carried over our railway lines.

When we fix upon New York as the place of foreign export to Great Britain or the most of western Europe, we must exclude the Baltimore and Ohio railroad as a competing line with our canals; or if we take Baltimore as the place of shipment of breadstuffs to the western parts of Europe, the increased ocean freights over those from New York more than counterbalance all the advantages gained by carrying freights from the lake countries over the line of that road.

While examining this question, we exclude entirely the discussion of every subject not strictly connected with the cost of transportation on our canals, where our rates of toll constitute a part of that cost. If largely remunerative charges have been made by the lake and river lines running from or to our canals, or by our railway lines running entirely disconnected and independent of them, and these charges have been stimulated by the interruptions or obstructions in channels of trade heretofore open as competing lines of traffic, it clearly would not be just to charge this to a want of patriotism on the part of the State authorities having the whole subject of the rates of canal tolls at their disposal.

An examination of the tables prepared and carefully compiled in this Department, and which have been continued for a series of years, shows the average cost per ton from Buffalo to tide-water was the same in 1861 as in 1857. This includes toll and carriers' charge over tolls. There have been periods during the late season of navigation, as well as in 1860 and 1861, when large freight prices have been paid on wheat and corn from Buffalo and Oswego to New York—prices largely in excess, as many believe, of what would be a fair compensation for the service performed. It is believed, however, the average for the season will not be found to present a very extraordinary case for legal interposition. Competition in a business where every man in the community can participate will prove the most efficient corrective of any abuses of this sort. Should this fail, however, by reason of combinations, legislative interference may be properly invoked to apply a correction

COST OF CANAL REPAIRS.

The Constitution of the State and the annual appropriation laws charge "the expenses of collection, superintendence and *ordinary* repairs" of the canals upon the accruing tolls during the fiscal year; these being ascertained and adjusted at the close of it, the balance of such tolls is appropriated and set apart to and for clearly defined and well understood objects and purposes, distinctly and specifically named.

The Canal Commissioners have jurisdiction over all the repairs to be made on a completed canal. They superintend and cause to be made all such *extraordinary repairs* and improvements as shall be ordered by the Canal Board or the Legislature, and may direct and cause to be made such *ordinary repairs* as they shall perceive necessary. This is the extent and limit of their general powers. Every canal in the State, and every structure upon every canal, has been erected, made and finished in accordance with well defined plans and specifications, particularly describing the height of the bank, the width of the canals at bottom and top water lines, the length and dimensions of the locks and the materials of which they are to be built, the height, dimensions and materials of the bridges, and where located. In fact, a completed canal is an object as well defined as the laws of the State, and the plans and specifications adopted and approved by the Canal Board can make them; hence any change or alteration in the original construction is an extra-ordinary repair or improvement outside of the *ordinary* repairs named in the Constitution and appropriation laws. The object and limit of the constitutional appropriation to which the canal tolls can be applied is so clear, plain and positive, as to put at rest all questions of doubt or construction.

The philological meaning of the word "ordinary" is well established, and has been for hundreds of years; it is too late now to attempt a change. When introduced into legal enactments, we must look to these well established popular explications for the meaning, explanation and definition intended to be given to it by the Legislature when incorporated into a law, and unless we find something in the law itself that controls or limits the grammatical interpretation and popular use of the term, we are not left to speculation. Hence, the Constitution and the appropriation acts declare that an "ordinary repair" is nothing more or less than a common, a usual, a regular, a customary or a methodical repair—a repair made according to established order.

The statutes relating to the ordinary and extraordinary repairs and improvements on completed canals, were in existence when the Constitution of 1846 was framed and adopted.

These terms were then known and used, and the Constitution inhibited the application of the canal tolls to any *other* object or purpose than the expenses of collection, superintendence and "*ordinary* repairs," until the Sinking Funds for the payment of the interest and redemption of the principal of the public debt were fully provided for. Any remainder is at the disposal of the Legislature.

Under the provisions of the act, chapter 105 of the Laws of 1857, the ordinary repairs of the canals have been, and are now made in accordance with contracts entered into for that purpose. It is not my purpose here to consider the policy or fitness of this mode of keeping the canals in repair, but to exhibit the charges paid under the system. On the 1st of October, 1860, the annual aggregate of the repair contracts was $259,372; on the 1st of October, 1861, $253,489, and on the 1st of October, 1862, $286,134, The reports from this Department and of the Canal Commissioners, show that the payments made by the Canal Commissioners and superintendents in each of the above years, on account of repairs, exceed the amount paid to the repair contractor.

Our past experience shows most conclusively that the sums paid to these contractors is too much if they do not perform their contracts well, and too little if they execute them to the letter.

All efforts to introduce economy in the public expenditures are overthrown and thwarted by artful devices of some sort to evade the plain injunctions of the Constitution and the specific requirements of the appropriation laws of the State, and in some instances, when these contrivances fail, legislative interposition is invoked to help parties along by legal sanctions. Cases are not unfrequent where the Legislature, of late years, has directed awards of damages, alleged to have been sustained in consequence of the overflow of waters occasioned by breaks in the canals or defective culverts, to be paid from the ordinary repair fund. The repair of a break in the canal, and the restoration of navigation, is a proper and legitimate charge upon the canal tolls; but the repair of a canal boat, or the damage done to a boat and cargo growing out of that break, cannot, without an abuse of terms, be called a canal repair. Every person navigates the canals at his own risk; the State does not insure against casualties, nor guarantee against damage, while the canals are being used.

The most striking case of modern date of the peculiar application of the repair fund is found in the act, chapter 420 of the Laws of 1859, where the Canal Board were directed to hear the claim of an individual who alleged he had been injured by falling through a defective canal bridge, and the Board were authorized to make an award of damages, and the act directed that such award should be paid out of the ordinary repair fund. The bridge was defective, the individual was injured, the Canal Commissioner was indictable for leaving the bridge in that condition, and the repair contractor or canal superintendent, or both, were liable to respond in damages for the injury, unless public notice of the defective condition of the bridge was duly posted The Canal Board made an award of two thousand dollars.

The summary below is a condensed view, in part, of an elaborate table exhibiting, in detail, the expenses for repairs on our canals the last year. It shows the aggregate of the monthly payments made to the repair contractors, payments for extra work done by the contractors, outside of the contracts, and certain miscellaneous payments made by the Commissioners to the contractors:

Erie Canal.		
Amount paid on contracts for repairs by Commissioners	$122,180 11	
Extra payments to contractors by drafts	7,598 38	
Miscellaneous payments to, by Commissioners	5,736 95	
		$135,515 44
Champlain Canal.		
Amount paid on contracts for repairs by Commissioners	$17,413 59	
Extra payments to contractors by drafts	172 15	
		17,585 74
Oswego Canal.		
Amount paid on contracts for repairs by Commissioners	$14,431 53	
Extra payments to contractors by drafts	4,755 43	
		19,186 96
Cayuga and Seneca Canal.		
Paid to contractors for repairs by Commissioners	$3,317 82	
Extra payments to contractors by drafts	940 88	
		4,258 70
Chemung Canal.		
Paid to contractors for repairs by Commissioners	$13,727 25	
Extra payments to contractors by drafts	3,921 82	
		17,649 07
Crooked Lake Canal.		
Paid to contractors for repairs by Commissioners	$3,868 94	
Extra payments to contractors by drafts	823 44	
		4,692 38
Chenango Canal.		
Paid to contractors for repairs by Commissioners	$26,584 88	
Extra payments to contractors by drafts	1,238 80	
		27,823 68
Carried forward		$226,711 97

Brought forward		$226,711 97
Genesee Valley Canal.		
Paid to contractors for repairs by Commissioners	$24,513 83	
Extra payments to contractors by drafts	23,475 66	
Miscellaneous payments to, by Commissioners	290 45	
		48,279 94
Black River Canal.		
Paid to contractors for repairs by Commissioners	$16,224 94	
Extra payments to contractors by drafts	937 12	
Miscellaneous payments to, by Commissioners	1,640 00	
		18,802 06
Oneida Lake Canal.		
Paid to contractors for repairs by Commissioners	$2,375 01	
		2,375 01
		$296,168 98

Recapitulation.

Total amount paid to the repair contractors on their contracts by the Canal Commissioners	$244,637 90
Total amount paid to the repair contractors for extra work done under the contracts	43,863 68
Total miscellaneous payments made by the Commissioners to repair contractors	7,667 40
	$296,168 98

It would be a labor to explain why more than 20 per cent. of the whole outlay here given should be made up of extras, which I shall not now undertake any further than to remark that the exta payments for repairs on the Genesee Valley canal were caused by a break on section one, which the contractor elected to repair in accordance with the terms of his contract, rather than abandon it. The above sum being the one-half of the whole entire cost over four thousand dollars.

If the terms of the repair contracts are strictly adhered to, and no repairs allowed and paid for, except such as come within the terms of the Constitution and the appropriation acts, these charges would not constitute quite so large a portion of our annual repairs as they now do.

The law, for wise purposes, strictly prohibits the Canal Board and the Canal Commissioners from making any extra allowances to contractors, but notwithstanding this inhibition nothing is more common than to find in the final accounts charges and allowances for extra work done by the direction of the engineers.

EXTRA-ORDINARY REPAIRS.

Any new work or improvement upon a completed canal, not contemplated in the original plan of construction, or that enlarges, improves or changes the character and dimensions of the canal, or any of its structures and appendages, have never before or since the adoption of the Constitution of 1846 been considered an ordinary repair, and since 1846 specific appropriations to these objects have been from time to time made by the Legislature, as funds were needed. Even permanent loans have been made to raise funds for these objects. It has never been pretended or assumed that the canals could be enlarged or their structures changed at the expense of the fund set aside by the Constitution to pay the interest and principal of the canal stock debt of the State. A proposition so directly at war with the plain terms of that instrument, and so clearly indicating a want of good faith to the public creditor, has not yet found an open advocate, although more than one step has been taken in that direction under the plea of public necessity. The Auditor has considered it his duty to resist all misapplications of this character of the funds subject to his warrants upon the treasury.

The last clause of the 3d section of the 7th article of the Constitution declares that "All contracts for work or materials on any canal shall be made with the person who shall offer to do or provide the same at the lowest price, with adequate security for their performance."

Donbts have been suggested whether this provision was intended to apply and does apply to contracts for repairs made by the Canal Commissioners. Legislative interpretation has been given to this provision only in two instances—in 1854, in the act providing for the enlargement and completion of the canals, and in 1857, when power was conferred upon the Contracting Board to let the canal repairs by contract. In both cases that Board is required to give public notice of the lettings intended to be made, and to award the contracts to the lowest bidder. The several laws conferring the powers and defining the duties of the Canal Commissioners in relation to repairs on the canals, have not been revised since that constitutional provision was adopted, and those officers, or some of them, have claimed and exercised the right of making contracts for work and materials without a resort to a public letting on due notice. By a private letting no opportunity is afforded of finding out who would do the work and furnsih the materials at the lowest price, and the State loses the advantage of competition. The Auditor has not directed attention to this subject because he doubts the good faith or questions the motives of the Commissioners. The question is an important one, and if the Constitution has been contravened, or a matter of sound policy overlooked, the Legislature may deem it proper to interfere.

UNPAID CLAIMS AGAIN.

The State's indebtedness to its own citizens is a subject of very considerable embarrassment, and the non-payment of these claims a matter of serious complaint. Many of these demands could be funded at the rate of interest now allowed, but such an act would be unwise and improvident, if the Legislature had the constitutional power to authorize it. The State has the ability to pay all the just claims of its citizens upon the treasury, and when it fails to do so it fails to perform a high and solemn duty.

The act to provide the means to pay the indebtedness of the State, chapter 318 of the Laws of 1862, appropriated one million three hundred and fifty-two thousand dollars to meet the various objects of indebtedness named in it, and authorized the levy of a tax of three-fourths of a mill on each dollar of valuation, to provide the means to pay the appropriations. The Legislature could not expect that this rate, upon the valuations of 1861, would bring into the treasury a sum equal to the appropriations. It must have been assumed that the valuations would have been raised so much above those of 1861 that the rate on the increased valuations would produce the amount appropriated. This theory, instead of being realized, has been entirely exploded by the State Assessors and the Board of Equalization.

The net proceeds of the tax will amount to $1,066,130, which has been apportioned as follows to the objects of appropriation named in the act, to wit:

To the Sinking Fund, under art. 7, sec. 3	$198,717
To pay final estimates	236,567
For land damages and interest	630,846
	$1,066,130

The amount set aside to pay the awards made by the Canal Appraisers and the Canal Board is $485,846, and this sum will only cover or pay the awards made by the Appraisers prior to the 1st of January, 1861, on which the State was paying interest at the rate of six per cent. per annum. Soon after the adjournment of the last session of the Legislature, the Commissioners of the Canal Fund authorized the Auditor to advance from the Sinking Funds, at four per cent. interest, on the credit of the tax, a sum sufficient to liquidate all the unpaid awards made before the first day of January, 1861, with the interest, in accordance with the terms of the said act.

These claims have been paid as fast as presented at the Department, and only a few of them remain unliquidated, and those remaining unpaid no longer bear interest.

The awards made by the Canal Appraisers in 1861, amount in the aggregate to $259,549.27. There are no funds provided and appropriated to pay them, nor to pay the awards of the Appraisers and of the Canal Board already made, and which may be made in 1862. The Auditor has no means of estimating a sum that will cover these latter awards. It will require at least $290,000 to pay the principal and interest of the awards of 1861, if liquidated early in 1863; but if payment be postponed, the accruing interest will call for a larger appropriation. The Auditor cannot form any opinion when this fountain of indebtedness will cease to flow at a rate of a quarter of million of dollars a year, nor when this expense will cease. We have already paid for land damages more than twice the sum estimated by the engineers as an item of cost for the enlargement and completion of the public works. The Auditor submits that some measures be adopted to pay the awards of 1861 at an early day.

CANAL FUNDS IN DEPOSIT.

In addition to the "statement of the receipts and payments on account of the canals and the canal debt," the

14th section of the act, chapter 162 of the Laws of 1848, requires the Auditor to report "the balances of the fund on hand, the dispositions of the same, and the conditions thereof."

Number 67 of the annexed tables, contains the names of all the depositories of the moneys belonging to the Canal Fund, both "available" and "unavailable," on the 30th day of September last, as also the funds invested on account of the fund in the custody of the Department.

Amount deposited in banks available,	$4,070,273 59
do do do unavailable	305,512 46
Total	$4,375,786 05

The claims against the Canal Bank, Albany, Walter Joy's Bank, Buffalo, and the securities held on real estate on account of Walter Joy's Bank, amounting in the aggregate to $139,638.53, are entirely worthless, and have been for years.

The amount reported due from the Empire City Bank, New York, $9,986.16, is wholly unavailable and the claim a total loss. The bank failed before 1856, and the assets were placed in the hands of a receiver, by whom some dividends were paid on the claim due the State, When the assets were exhausted a judgment was recovered against the sureties for the whole amount due from the bank. In September, 1859, the Commissioners of the Canal Fund compromised the judgment against the sureties, by receiving $3,000.00 on the debt due the State, and giving them a full discharge and acquittance from the above balance.

The unavailable deposits were reduced by payments during the fiscal year $184,017.83, and $50,080.79 since the first of October last, making a total of $234,198.62 realized from October 1, 1861, to the date of this report.

The claim against the Artizans' Bank, New York, arising out of a recent failure, was placed in the hands of the Attorney General for prosecution. The Auditor has understood that proceedings have been instituted against the bank and a receiver appointed, but no dividends have yet been paid on the claim. All the sureties to the bond are believed to be entirely insolvent. The Bank of Corning failed in 1857, and the Attorney General was directed to commence a prosecution on the bond to collect the claim due the State from the sureties, who are understood to be solvent. The Auditor is not now advised of the present condition of the suit.

The demand against the Hollister Bank, Buffalo, is one the claims paid in full since the close of the fiscal year. The unavailable balance against Oliver Lee and Company's Bank, Buffalo, of $15,513.64, is very likely to remain unavailable some time. The bank failed in 1857, holding large deposits of canal tolls and loans. The sureties on the bank's bonds were considered good. The Attorney General was directed to proceed against the bank and collect the demands. He did so as fast as the law's delays would allow. Sundry dividends were paid by the receiver, and the sureties on some the bonds settled the balances for which they were liable. The Auditor is informed the State obtained a judgment against some of the parties to the bonds, and real estate at Buffalo was sold on the execution and bid in by the State for fourteen or fifteen thousand dollars. The Auditor has been informed by the Deputy Attorney General, that by some proceeding of the courts at Buffalo, these lands were directed to be sold as assets of the bank, and the proceeds brought into court and distributed among the creditors. That distribution has been made, and the State got about fifteen hundred dollars on a claim of about seventeen thousand.

The Deputy Attorney General also states that the Attorney General had no notice of the application by the receiver to the court for an order of final distribution; that such notice was served upon Mr. Lewis, the State Treasurer, who, for some reason, did not deliver the papers to the Attorney General, or give any further attention to them, than to lay them aside, where they remained until after the order for a final distribution of the assets had been made. The debt may now be counted upon as a total loss.

The papers relating to the claim against the Medina Bank, which failed in 1861, were placed in the hands of the Attorney General for prosecution soon after the bank suspended. The Auditor has not any information in regard to the proceedings had against the bank or the sureties on the bond, except that the pretended bank turned out to be a myth, and the sureties upon the bond insolvent without hope.

The Pratt Bank suspended in 1857. Since that time about ten thousand dollars have been realized on the demand then due. The sureties in the bond given by the bank became insolvent soon after the bank failure, and the assets of the bank were assigned in trust to pay the debt due to the State. These assets are now being disposed of by the trustee, and the avails paid into the treasury as fast as realized. It is expected a part of the balance now due the State will be paid, but not the whole of it.

The deposit in the Commercial Bank, Albany, was made to facilitate the payment of State bounties to volunteers. The Auditor understands the whole sum, $2,000,000, has been temporarily advanced for that object. All the facts, however, relating to this subject, will probably be communicated to the Legislature in the annual report of the Comptroller, and the Auditor only refers to it as the deposit is a large one to be held by one banking institution.

Prospective Traffic of 1863.

When presenting the question in reference to the trade of 1862 in the last annual report from this Department, the Auditor indulged in anticipations that have been more than realized during the season of navigation about closing. The future demand of Europe for our surplus breadstuffs is not now so clear as then, nor are we quite certain that our surpluses for export will be near as large in 1863 as they were in 1861 and 1862. The tonnage in vegetable food alone in 1861 was only 747,573 less than the whole number of tons carried on all the canals of the State in 1847 of every description of property moved. Comparing the movements of 1860 and 1861 with former years as far back as 1847, and we must be satisfied that our position in reference to trade on the canals since 1859 has been an exceptional one to a considerable extent. If our position has been, during that period, purely normal, then we can have no fears in regard to the future. The traffic on the canals has been somewhat, but not largely, increased by the closing of the Mississippi river. This we know by comparing the grain movements from the western States in 1860, when the river was open, with those of 1861, when it was closed.

During the greater part of the last season, the exports of wheat, corn, and flour, have been very much stimulated in consequence of the monetary condition of the country. These articles were purchased and paid for in currency twenty, thirty, and forty per cent. below the commercial price of exchange, so that by the sale of his bills the ex-porter would realize a profit by the transaction even if he sold his flour and grain at the port of destination at an advance barely sufficient to cover the freight.

Another fact drawn from comparison may be presented to show our position may be an exceptional one. The whole number of tons moved on the canals in 1857 was 903,000 less than in 1853, while the movement in 1861 only shows an increase of 259,782 tons over the latter year. An average increase of only 32,472¾ tons a year, with an average yearly increase in tolls of $88,008.37.

While the Auditor feels and expresses serious doubts and apprehensions as to the future successful workings of the canals equal to the past two years and eleven months, he points with pride and satisfaction to the fruits of a policy which has at all times had his humble support and hearty approval: a policy that has shown our canals, if rightly managed, can take care of themselves, without collateral aids, and has overthrown, dispersed, and scattered the various humbugs and false pretenses about diversions of trade, begotten by malevolence and patronized by peculation—a premeditated raid upon the interests of the people of this State, more injurious, hurtful, and disgraceful, since it was permitted unrebuked, than the late rebel onslaught upon Maryland and Pennsylvania.

The tolls and tide-water receipts indicate strongly that the total movement on the canals in 1862 will reach, if it does not exceed, 4,800,000 tons. In the last fiscal report from this Department the Auditor expressed the opinion that the increase of half a mill in the rates on flour and wheat would materially benefit the revenue, and would not injure the canal navigating interests. This increase was made last spring; the tolls have increased, the transit of wheat and flour on the canals has not fallen off, and the compensation to the carrier has not been affected by this action of the Canal Board. The idea that the toll-rates has any connection with the carrier's profits or compensation is entirely speculative. The toll or export duty is paid by the shipper, and although it is added to and makes up a part of the price or compensation paid to the carrier for delivery at New York, Albany, or any other point, in fact it is never considered as any part of the service for which the carrier is to be paid. The shipper uses the canals indirectly, and pays for that use, and the carrier does not pay it.

ESTIMATES FOR THE NEXT FISCAL YEAR.

The tonnage movements on the canals in 1860 and 1861 were unprecedentedly large. Apparently there has not been any falling off the present season. For reasons not now necessary to state, the Auditor is of opinion that the receipts for the season of 1863 will not be so large as those of 1862.

Receipts from tolls from September 1st, 1862, to the close of navigation	$2,314,613 00	
Receipts from tolls from the opening of navigation in the spring of 1863 to September 1st, of the same year	2,200,000 00	
		$4,514,613 00
Estimated proceeds of the tax required to be annually collected, under the act, chap. 271, Laws of 1859		$288,889 00
Total estimated gross receipts		$4,803,502 00
Deduct appropriation for collection, superintendence, and ordinary repairs		800,000 00
Total estimated net revenue		$4,003,502 00
Carried forward		$4,003,502 00

Brought forward		$4,003,502 00
This sum is charged, under the Constitution, with the following annual payments:		
Under section 1, article 7,	$1,700,000 00	
Under section 2, article 7,	350,000 00	
Under section 3, article 7,	710,000 00	
Under section 3, article 7,	406,242 65	
Under same section and article,	200,000 00	
Under the act, chapter 271, Laws of 1859, section 12, article 7	288,889 00	
		3,655,131 65
Remainder over		$348,370 35

The estimated receipts for the four remaining navigation months of the fiscal year are based upon such probable facts as the Auditor believes are most likely to occur. The actual receipts of the four spring months of the last fiscal year exceeded the estimates by $1,000,000, and were $600,000 more than are given in the foregoing statement. There probably will not be, during the next season, any increase over the past in the tonnage on the products of the forest, such as boards and scantling, staves and timber. We had two years' supply to operate with when the past season opened; the market was ready for it and the supply came forward. There are not at present any well-defined facts going to show that the traffic of 1861 and 1862 in vegetable food, such as flour, wheat, and corn, which constitutes nearly half of the whole tonnage, and three-fourths of all the toll receipts, will be extended to 1863. At any rate, if the estimated receipts are not largely in excess of what will be realized, we may confidently expect the canals will take care of themselves one year longer, without resort for aid from the people of the State, through the tax-collector.

CLERKS IN THE DEPARTMENT.

Table No. 82 contains the names of the several persons employed by the Auditor in the Department as clerks during the year past, and the compensation paid to each. Their labors have been constant and arduous, and the salaries paid to them have been well earned. These salaries are intended to compensate for services actually performed for the State. Whoever knows what that work and labor is, and its value and importance to the public, can well appreciate the Auditor's estimate of them.

COMPLETION OF THE CANALS AND THE COST.

By the provisions of the act, chapter 169, Laws of 1862, all contracts for the enlargement and completion of the canals were directed to be performed on or before the 1st of September last, and the accounts thereof directed to be closed as soon thereafter as might be done, and from that day the said works must be considered as finished and completed.

The accounts between the treasury and the public works must be considered as closed by the financial article of the Constitution of 1846. The balance was then ascertained and struck, and the liquidations adjusted, as expressed by the terms of that article. Since that time there has been contributed and raised, by and from the following sources, the sums stated below, and expended for the enlargement and completion of the canals, as contemplated by the original and amended section 3 of article 7.

Received of the remainder of the "surplus revenues," from 1847 to 1853 inclusive, and applied to the enlargement, &c.	$4,851,965 80	
From loan for enlarging locks on the Oswego canal. Sec. 10, art. 7	200,000 00	
		$5,051,965 80
Carried forward		$5,051,965 80

Brought forward		$5,051,965 80
From avails of canal revenue certificates applied to the enlargement, &c.	$1,500,000 00	
Avails of loans contracted under sec. 3, art. 7, applied to enlargement, &c.	9,000,000 00	
		10,500,000 00
Received from premiums on loans and applied to enlargement, &c.	$1,529,881 38	
Avails of temporary loan. Sec. 10, art. 7	200,000 00	
Avails of floating debt loan, $2,500,000, applied to payment of enlargement debts	2,629,734 50	
		4,359,615 88
Avails of all taxes levied since 1853, and paid into the treasury prior to October 1, 1862, and applied to enlargement, &c.	$4,133,777 99	
Estimated receipts from the tax under chap. 318 Laws of 1862, to be applied, &c.	666,894 00	
		4,800,671 99
		$24,712,253 67

The above aggregate of $24,712,253.67, is what has been received from the sources named, and applied in payment of the completion of the public works since 1846, including payments for land damages and the expenses of engineering: a sum far exceeding the highest and widest estimate ever ventured upon by the most vehement doubter of engineering infallibility. Our disappointments at finding the cost so far exceed the estimates, may be somewhat modified when we learn that earth excavations have been estimated to the contractors as rock; that adopted plans of construction have been changed for more expensive modes, without authority, merely to benefit contractors; that expensive vertical wall has been substituted for the less costly slope wall covered by the estimates and contracts; that fine costly masonry has been used in the place of a coarser and lower-priced kind embraced in the estimates; that contracts, reserving high prices for excavation and embankment, have been illegally extended so as to cover work embraced in other contracts where the prices were much less remunerative to the contractors; that thousands of yards of rock excavation have been found, estimated, and paid for at high prices, where none is seen in the estimate of cost made by the Engineer; that contractors have been over-estimated both for work done and materials delivered; that, in numerous instances, the estimates of quantities have been far below the actual measurements when the work was completed. These are some of the reasons why the cost of completion has so largely exceeded the original estimates.

When, in 1853, the 3d section of the 7th article was amended so as to permit the borrowing of *nine* millions of dollars to complete the enlargement, the estimates showed this was all that would be needed for that purpose, but we have already exceeded it by $9,160,287.87, and more is required.

In addition to the above, we have made deficiency loans, on the credit of the Sinking Fund, to pay the quarterly interest on the new enlargement debt of $10,500,000, to the amount of..	$1,500,000 00
Since 1854 we have levied and raised taxes to pay the quarterly interest on that debt, to...	3,318,448 21
Making a total of..............................	$4,818,448 21

These taxes, as well as all others raised for canal purposes, are a mortgage upon the tolls until refunded to the treasury.

The Auditor does not understand that, in the present condition of the country, it will be the policy of the State to enter into any new works of enlargement on our present canals, or to project any new lines of improvement that must involve the imposition of new burthens upon the people, while engaged in an intestine war, to uphold and maintain our national existence. Extraordinary repairs and improvements of the present completed canals may be found highly useful, and, in some cases, imperatively necessary, and funds will be needed, in excess of the ordinary repair appropriations, to cover these extraordinary charges. The sums required for these objects will not be large. They will be limited from year to year, as the means in hand will authorize and permit, without incurring prospective and unknown and unascertained liabilities that have no bounds, no limits, except in the speculative notions of projectors, and the strong local desires to participate in the expenditures of the public moneys.

SUPERVISION AND SUPERINTENDENCE.

The Auditor is of opinion that there is a radical defect in the present mode of supervising and superintending the running of boats on the canals. A late Canal Commissioner in his report suggested the abolition of that office and the substitution of one general superintendent, to have charge of the canals, supervise the repairs, and give directions as to the mode and manner of running boats and navigating the canals. May we not profit by the example of individual enterprise and experience? There is not a railway in this country, no matter how extended, where the responsibility of this description is a divided one. One mind, one will, and one hand, is more ready to act, direct, and execute than two or more. Uniformity, system and regularity are quite as essential in navigating the canals as in carrying on any other large and extensive business. Our laws concerning the navigation of the canals, and the regulations of the Canal Board, all aim at these results, but the difficulties encountered in carrying them into effect arise entirely from the fact that we have as many minds, wills and hands to execute them as there are officers on the canals employed by the State. In one case, and only one, can uniformity and regularity be practically enforced, and that is in the collection of tolls. In this branch of the canal service there has sometimes been unauthorized interferences that have not been suffered to go long without correction, and uniformity and regularity has generally been maintained.

CONCLUSION.

The Auditor will not indulge in any extended reflections in closing the seventh consecutive annual report of the fiscal transactions of the Department under his charge. He entertains what he believes well founded expectations, that the future of our canals is more hopeful and encouraging than we could have anticipated previous to 1860; and still we have no right to expect, nor can we reasonably hope, for the like eminent success in the coming three years that we have had during the three past. Our public works, in many material respects, are imperfect and need improvements; but we should lay aside all thought, design or expectation of calling for aid outside of their revenues. We should, and therefore ought to, be content with them. Full and bountiful harvests are often followed by dearths and famine, when a plethoric treasury will give place to empty money-boxes and small deposit balances.

As a State and a Nation we know nothing of the blighting and crushing effect of a vitiated and debased currency, and its paralizing influences upon the moral and social condition of communities. We are beginning to know something of the difference in commercial value between a paper dollar and a silver or gold dollar, and they may, and it is feared they will, become as familiar subjects in accounts and traffic as the paper and silver roubles of Russia, or the paper and silver florins of Austria, where governments levy their imposts in metallic currency, but receive an increased per centage in paper as payment. We have not yet progressed so far as to feel all the inconvenience of a permanent deficiency in revenue to cover the ordinary and extraordinary expenses of the government, but are we not approaching that goal with fearfully rapid strides? We have much to hope for and expect from the rebounding energies and the energetic aspirations of our people, but the strong man may be stricken down, and the experience of the past may become a bad guide for our future direction.

If we cannot and do not stop where we are, and confine our State expenditures and outlays to our actual and ordinary receipts of income and revenue, we shall act as no wise or prudent man would in his private affairs.

All and more than all the conveniently available resources of our State and people are needed at this moment to aid the National Government in maintaining its existence, restoring the great constitutional compact over every degree of latitude and longtitude of the country that was covered by it before the rebellion.

If this great public work is not paramount to all others, State or National, then the Auditor has placed too high an estimate on the value of the union of all States of the Republic in reference to the present as well as the future welfare of our people and country. Every minor object and every selfish consideration should give place to the preservation of our national existence.

Respectfully submitted,

N. S. BENTON, *Auditor.*

DOCUMENTS

ACCOMPANYING THE REPORT OF THE AUDITOR.

(No. 1.)

There was on deposit in sundry banks, to the credit of the Treasurer of the State, on account of the Canal Fund, on the 30th September, 1861, (see page 77 of the last report,)

The sum of		$2,435,845 04
And in the custody of the Auditor, securities invested on account of the Canal Fund, viz	$144,623 15	
Securities of real estate of Walter Joy's Bank	20,354 06	
Real estate, etc., of the Bank of Corning	3,799 00	
		168,776 21
		$2,604,621 25
Appropriations overdrawn but refunded under chap. 365, Laws of 1857, viz: The		
Erie canal enlargement. See No. 39,	$85,754 00	
Champlain canal 41,	32,382 82	
Cayuga and Seneca canal 45,	25,545 02	
Genesee Valley canal 55,	11,129 79	
		154,811 63
		$2,759,432 88
Deduct overpayments, as above included in accounts below		154,811 63
		$2,604,621 25
Received during the year ending 30th Sept., 1862, *viz:*		
Sinking Fund for the redemption of the canal debt. See No. 2,	$22,942 24	
Sinking Fund for the redemption of the debt for the enlargement and completion of the canals, See No. 4,	41.086 77	
Carried forward	$64,029 01	$2,604,621 25

Brought forward	$64,029 01	$2,604,621 25
Sinking Fund for the redemption of the loans for payment of the floating debt........See No. 8,	18,045 69	
Interest on loan for extraordinary repairs............See No. 14,	3,000 00	
Interest on loan for the Albany basin ....See No. 20,	9,629 28	
Taxes of 1860.......See No. 22,	1,699,110 78	
Taxes of 1861.......See No. 24,	1,070,512 31	
Fund for the payment of the floating debt..........See No. 30,	1,503 79	
Fund for temporary loans 32,	10,000 00	
Repair trust fund 34,	36,931 63	
Erie canal enlargement 38,	13,411 20	
Erie and Champlain canals...40,	4,587,583 28	
Oswego canal................42,	167,589 92	
Cayuga and Seneca canal. ...44,	26,146 30	
Chemung canal...............46,	22,361 38	
Crooked Lake canal 48,	712 70	
Chenango canal..............50,	22,155 94	
Black River canal...........52,	8,892 68	
Genesee Valley canal........54,	28,797 27	
Oneida Lake canal...........56,	121 83	
Baldwinsville canal..........58,	31 83	
Oneida river improvement....60,	2,311 06	
Seneca river towing path.....62,	374 55	
Cayuga inlet................64,	241,94	
		7,793,494 37
		$10,398,115 62

Paid during the same period, viz:

Sinking Fund for the redemption of the canal debt ...See No. 3,	$922,454 49	
Sinking Fund for the redemption of the debt for the enlargement and completion of the canals, See No. 5,	1,928,000 00	
Carried forward............	$2,850,454 49	$10,398,115 62

Brought forward	$2,850,454 49	$10,398,115 62
Sinking Fund for the redemption of the loans for payment of the floating debt .... See No. 9,	153,996 53	
Sinking Fund for the general fund debt .... See No. 7,	350,000 00	
Interest on loan for extraordinary repairs .... See No. 15,	3,000 00	
Interest on loans to supply deficiencies .... See No. 17,	463,341 48	
Interest on loan to pay debts due prior to 1st June, 1846, See No. 19,	6,000 00	
Interest on loan for Albany basin .... See No. 21,	9.629 28	
Fund for temporary loans 33,	10,000 00	
Repair trust fund 35,	6,430 21	
Erie canal enlargement 39,	796,196 31	
Erie and Champlain canals 41,	485,590 47	
Oswego canal 43,	192,462 39	
Cayuga and Seneca canal 45,	121,192 27	
Chemung canal 47,	112,695 24	
Crooked Lake canal 49,	8,081 91	
Chenango canal 51,	43,820 19	
Black River canal 53,	61,123 28	
Genesee Valley canal 55,	130,055 51	
Oneida Lake canal 57,	2,804 16	
Baldwinsville canal 59,	174 67	
Oneida river improvement 61,	1,642 43	
Cayuga inlet 65,	120 97	
		5,808,811 79
Leaving a balance on 30th Sept., 1862		$4,589,303 83

Of the above balance, there is on deposit in banks, to the credit of the Treasurer of the State, on account of the Canal Fund, the sum of .... See No. 67, $4,375,786 05

In the custody of the Auditor, securities invested on account of the Canal Fund, viz:

Carried forward $4,375,736 05

Brought forward		$4,375,786 05
Bank Fund stock	$12,743 15	
Canal stocks	176,621 57	
Securities of real estate of Walter Joy's Bank	20,354 06	
Real estate, etc., of Bank of Corning	3,799 00	
		213,517 78
		$4,589,303 83
Appropriations overdrawn, viz:		
Champlain canal — See No. 40,		4,402 66
		$4,593,706 49

Of the above amount there belongs to

Sinking Fund for the redemption of the canal debt	See No. 3,	$1,533,374 98
Sinking Fund for the redemption of the debt for the enlargement and completion of the canals	See No. 5,	964,833 57
Sinking Fund for the General Fund debt	7,	350,000 00
Sinking Fund for the redemption of the loans for the payment of the floating debt	See No. 9,	426,754 76
For the support of government	11,	200,000 00
Investment of premiums on loans	13,	24,307 63
Fund for the completion of the canals	27,	149,624 69
Fund for temporary loans	33,	1,949 82
Repair trust fund	35,	93,501 42
Remainder of the revenues of 1862	37,	685,348 69
Erie canal enlargement	39,	51,662 07
Oswego canal	43,	64,443 63
Cayuga and Seneca canal	45,	15,932 19
Crooked Lake canal	49,	415 15
Chenango canal	51,	1,717 00
Black River canal	53,	20,900 02
Genesee Valley canal	55,	8,940 87
		$4,593,706 49

SINKING FUND FOR THE REDEMPTION OF THE CANAL DEBT.

(*Under article* 7, *section* 1, *of the Constitution.*)

(No. 2.)

Balance on hand 30th September, 1861	$1,809,842 08
Received, viz:	
Interest on loans and deposits	22,942 24
Transferred from the revenues of the State canals during the fiscal year ending 30th September, 1862 ... See No. 41,	1,700,000 00
	$3,532,784 32

(No. 3.)

Paid, viz:		
For the redemption of canal stocks, viz:		
Erie canal enlargement, 5's, 1st June, 1862	$587,000 00	
Chemung canal, 5's, 1st June, 1862	7,000 00	
Chenango canal, 5's, 1st June, 1862	3,000 00	
Black River canal, 5's, 1st June, 1862	51,000 00	
Genesee Valley canal, 5's, 1st June, 1862	241,000 00	
Oneida river improvement, 5's, 1st June, 1862	8,000 00	
		$897,000 00
Genesee Valley canal, 5's, after 1860		23,000 00
For the expense of keeping the office for the transfer of stock in the Manhattan Company, under chap. 228, Laws of 1840, viz:		
To Manhattan Company	$1,250 00	
To Robert L. Case, agent, for salary	562 50	
To Richard A. McCurdy, agent, for salary	187 50	
For account books and stationery	212 00	
		2,212 00
Premium on stock, 5's, 1st June, 1862, purchased before maturity		22 49
Carried forward		$922,234 49

Brought forward		$922,234 49
Allowance by Canal Board, 13th Nov. 1861, to Hiram Chapman, Samuel S. Ellsworth, and James C. Robinson, under chap. 157, Laws of 1845		220 00
		$922,454 49
Transferred to pay interest on loans for the following funds, viz:		
To supply deficiencies	$463,341 48	
To pay debts due prior to 1st June, 1846	6,000 00	
Erie canal enlargement	30,895 27	
Chemung canal	233 33	
Chenango canal	100 00	
Black River canal	2,900 00	
Genesee Valley canal	13,493 33	
Oneida river improvement	266 67	
		517 230 08
Transferred to fund for the enlargement of the Erie, etc., as an advance on the tax of 1862. See No. 38,		559,724 77
		$1,999,409 34
Balance on hand 30th of September, 1862		1,533,374 98
		$3,532,784 32

SINKING FUND FOR THE REDEMPTION OF THE CANAL DEBT.

(*Under article* 7, *section* 3, *of the Constitution.*)

(No. 4.)

Balance on hand 30th September, 1861		$124,761 53
Received, viz:		
From General Fund, for interest on tax of 1860		41,086 7
Transferred from taxes of 1860 . . . . See No. 23,		1,580,742 d
Transferred from the surplus revenues of the State canals, on the 30th September, 1862, under article 7, section 3, of the Constitution, viz:		
For interest . . . . See No. 41,	$710,000 00	
For principal 41,	436,242 66	
		1,146,24 66
		$2,892,83 57

(No. 5.)

Paid, viz:

For redemption of stock deficiency loan, 6's, 1st January 1862	$1,200,000 00
Interest on loans	728,000 00
	$1,928,000 00
Balance on hand 30th September, 1862	964,833 57
	$2,892,833 57

SINKING FUND FOR THE GENERAL FUND DEBT.

(*Under article* 7, *section* 2, *of the Constitution.*)

(No. 6.)

Received, viz:

Transferred from the revenues of the State canals during the fiscal year ending 30th of September, 1862, (now on hand and due the treasury,) See No. 41,	$350,000 00

(No. 7.)

Paid, viz:

To the Treasurer of the State the contribution due 30th of September, 1861	$350,000 00

SINKING FUND FOR THE REDEMPTION OF THE CANAL DEBT.

(*Under article* 7, *section* 12, *of the Constitution.*)

(No. 8.)

Balance on hand 30th September, 1861		$87,500 00
Received, viz:		
Interest on canal stock	$9,305 75	
Interest on Bank Fund stock	1,639 58	
From General Fund for interest on taxes of 1860	7,100 36	
		18,045 69
Transferred from taxes of 1860 ..... See No. 23,		118,368 17
Transferred from taxes of 1861 25,		356,837 43
		$580,751 29

(No. 9.)

Paid, viz:		
Premium and accrued interest on stocks purchased for investment	$3,996 53	
Interest on loans	150,000 00	
		$153,996 53
Balance on hand 30th September, 1862		426,754 76
		$580,751 29

FOR THE SUPPORT OF GOVERNMENT.

(*Under article* 7, *section* 3, *of the Constitution.*)

(No. 10.)

Received, viz:	
Transferred from the revenues of the State canals during the fiscal year ending 30th September, 1862 See No. 41,	$200,000 00

(No. 11.)

Balance on hand due the treasury 30th of Sept., 1862	$200,000 00

INVESTMENT OF PREMIUMS ON LOANS.

(*Under chapter* 329, *Laws of* 1854.)

(No. 12.)

Balance on hand 30th of Sept., 1861	$47,260 44

(No. 13.)

Paid, viz:	
Transferred to fund for the enlargement and completion of the canals See No. 28,	$22,952 81
Balance on hand 30th of September, 1862	24,307 63
	$47,260 44

FUND TO PROVIDE FOR EXTRAORDINARY REPAIRS.

(*Chapter* 374, *Laws of* 1849.)

(No. 14.)

Received, viz:

From the treasury	$3,000 00

(No. 15.)

Paid, viz:

Interest on loans	$3,000 00

INTEREST ON THE LOANS TO SUPPLY DEFICIENCIES.

(*Article* 7, *section* 1, *of the Constitution.*)

(No. 16.)

Received, viz:

Transferred from the Sinking Fund for the redemption of the canal debt........See No. 3,	$463,341 48

(No. 17.)

Paid, viz:

Interest on loans	$463,341 48

INTEREST ON THE LOAN TO PAY DEBTS DUE PRIOR TO JUNE 1, 1846.

(*Chapter* 232, *Laws of* 1849.)

(No. 18.)

Received, viz:

Transferred from the Sinking Fund for the redemption of the canal debt........See No. 3,	$6,000 00

(No. 19.)

Paid, viz:

Interest on loan	$6,000 00

INTEREST ON THE LOAN FOR THE ALBANY BASIN.

(*Chapter* 200, *Laws of* 1849.)

(No. 20.)

Received, viz:

From the treasury	$9,629 28

(No. 21.)

Paid, viz:

Interest on loan	$9,629 28

TAXES OF 1860.

(No. 22.)

Received, viz:

From the treasury, under chapter 494, Laws of 1860	$1,580,742 61
From the treasury, under chapter 271, Laws of 1859	118,368 17
From the treasury for interest on taxes of 1860, while retained for the uses of the General Fund	48,187 13
	$1,747,297 91

(No. 23.)

Paid, viz:

Transferred to the Sinking Fund for the redemption of the canal debt, under art. 7, sec. 3, of the Constitution .... See No. 4,	$1,621,829 38
Transferred to the Sinking Fund for the redemption of the canal debt, under art. 7, sec. 12, of the Constitution .... See No. 8,	125,468 53
	$1,747,297 91

TAXES OF 1861.

(No. 24.)

Received, viz:

From the treasury, under chapter 213, Laws of 1860	$713,674 88
From the treasury, under chapter 271, Laws of 1859	356,837 43
	$1,070,512 31

(No. 25.)

Paid, viz:	
Transferred to the fund for the enlargement and completion of the canals..........See No. 28,	$713,674 88
Transferred to the Sinking Fund for the payment of the canal debt, under art. 7, sec. 12, of the Constitution......................See No. 8,	356,837 43
	$1,070,512 31

FUND FOR THE COMPLETION OF THE ERIE CANAL ENLARGEMENT, THE BLACK RIVER AND GENESEE VALLEY CANALS.

(*Article* 7, *sec.* 3, *of the Constitution, and chap.* 485, *Laws of* 1851.)

(No. 26.)

Balance on hand 30th of September, 1861......	$149,624 69

(No. 27.)

Balance on hand 30th of September, 1862......		$149,624 69
The above balance consists of deposits in the Canal Bank of Albany.........	$59,252 41	
Empire City Bank..............	9,986 16	
Walter Joy's Bank, Buffalo......	60,032 06	
		$129,270 63
Also securities of real estate of Walter Joy's Bank		20,354 06
		$149,624 69

FUND "FOR THE ENLARGEMENT OF THE ERIE, THE OSWEGO AND THE CAYUGA AND SENECA CANALS, AND FOR THE COMPLETION OF THE BLACK RIVER AND GENESEE VALLEY CANALS, AND FOR OTHER PURPOSES."

(*Article* 7, *sec.* 3, *of the Constitution, and chap.* 329, *Laws of* 1854.)

(No. 28.)

Received, viz:

Transferred from taxes of 1861, under chapter 213, Laws of 1860 See No. 23,	$713,674 88
Transferred from the investment of premiums on loans See No. 13,	22,952 81
Transferred from the Sinking Fund for the redemption of the canal debt, under art. 7, sec. 1, of the Constitution, for advance on taxes of 1862, under chap. 318, Laws of 1862 See No. 3,	559,724 77
	$1,296,352 46

(No. 29.)

Paid, viz:

Transferred to the following accounts, viz:

Erie canal enlargement (see No. 38) taxes of 1861	$393,549 40	
Premiums	15,943 32	
Advance on taxes, 1862,	441,014 85	
		$850,507 57
Erie and Champlain canals, Champlain, (see No. 40) taxes of 1861	$85,663 76	
Premiums	999 23	
Advance on taxes, 1862,	7,692 63	
		94,355 62
Oswego canal (see No. 42) taxes of 1861	$97,816 43	
Premiums	3,142 09	
Advance on taxes, 1862,	15,899 82	
		116,858 34
Cayuga and Seneca canal (see No. 44) taxes of 1861	$69,898 61	
Premiums	1,498 07	
Advance on taxes, 1862,	67,847 62	
		139,244 30
Carried forward		$1,200,965 83

Brought forward		$1,200,965 83
Black River canal (see No. 52) taxes of 1861	$38,104 75	
Premiums	924 16	
Advance on taxes, 1862,	1,814 72	
		40,843 63
Genesee Valley canal extension (see No. 54) taxes of 1861	$14,348 68	
Genesee Valley canal completion (see No. 54) taxes of 1861	14,293 25	
Premiums	445 94	
Advance on taxes, 1862,	25,455 13	
		54,543 00
		$1,296,352 46

FUND FOR THE PAYMENT OF THE FLOATING DEBT OF THE STATE.

(*Chapter* 271, *Laws of* 1859.)

(No. 30.)

Balance on hand 30th September, 1861	$90,804 79
Received, viz:	
Interest on deposits	1,503 79
	$92,308 58

(No. 31.)

Paid, viz:

Transferred to the following funds for payment of floating debt, viz:

Fund of the Erie canal enlargement	See No. 38,	$38,798 34
do Erie and Champlain canal	40,	640 00
do Oswego canal	42,	40,577 60
do Cayuga and Seneca canal	44,	478 93
do Black River canal	52,	303 91
do Genesee Valley canal	54,	11,509 80
		$92,308 58

FUND FOR TEMPORARY LOANS.

Article 7, *section* 10, *of the Constitution.*)

(No. 32.)

Balance on hand 30th September, 1861	$1,949 82
Received, viz:	
From the treasury	10,000 00
	$11,949 82

(No. 33.

Paid, viz:	
Interest on loan	$10,000 00
Balance on hand 30th September, 1862	1,949 82
	$11,949 82

REPAIR TRUST FUND.

(*Chapter* 177, *Laws of* 1861.)

(No. 34.)

Balance on hand 30th September, 1861		$63,000 00
Received, viz:		
From sundry contractors for repairs, as security for the performance of their contracts	$32,000 00	
For interest on loans	4,931 63	
		36,931 63
		$99,931 63

(No. 35.)

Paid, viz:		
Forfeitures, viz:		
To fund of the Cayuga and Seneca canal, for amount of deposit by John Ecker, contractor for repairs of that canal	$4,000 00	
Interest accrued	210 48	
		$4,210 48
To fund of the Erie and Champlain canals, for amount of deposit by C. J. DeGraw, contractor for repairs of section 1, of the Champlain canal	$2,000 00	
Interest accrued	219 73	
		2,219 73
Balance on hand 30th September, 1862		93,501 42
		$99,931 63

REMAINDER OF THE REVENUES OF 1862.

(*Under article* 7, *section* 3, *of the Constitution.*)

(No. 36.)

Received, viz:

Transferred from the revenues of the State canals during the fiscal year ending 30th September, 1862 .... See No. 41,	$685,348 69

(No. 37.)

Balance on hand 30th September, 1862	$685,348 69

FUND OF THE ERIE CANAL ENLARGEMENT.

(No. 38.)

Received, viz:

Of Hiram Gardner, Canal Commissioner, for sale of old buildings on sec. 337, Erie canal enlargement	$45 00	
W. B. Taylor, late resident engineer, balance of account	135 33	
		$180 33
On account of balances in hands of Canal Commissioners, 30th September, 1861, viz:		
William I. Skinner	$7,462 56	
Benjamin F. Bruce	3,567 88	
Hiram Gardner	2,200 43	
		13,230 87
		$13,411 20
Transferred from the following funds, viz:		
The Sinking Fund, to pay interest .... See No. 3,		30,895 27
The fund for the enlargement and completion of the canals .... See No. 29,		850,507 57
The fund for payment of the floating debt, See No. 31,		38,798 34
		$933,612 38

(No. 39.)

Paid, viz:

To Canal Commissioners, viz:

Charles H. Sherrill, on the eastern division	$2,142 45	
William I. Skinner, on the eastern division	116,646 18	
		$118,788 63
John M. Jaycox, on the middle division	$23,095 78	
Benjamin F. Bruce, on the middle division	49,053 83	
William W. Wright, on the middle division	61,249 11	
		133,398 72
Hiram Gardner, on the western division	$192,309 35	
Franklin A. Alberger, on the western division	240,833 19	
		433,142 54
		$685,329 89
To Canal Commissioners, unexpended by them:		
William I. Skinner	$6,339 36	
William W. Wright	6,056 18	
Franklin A. Alberger	74 44	
		12,469 98
For compensation of Canal Appraisers. See No. 83,		7,401 42
Recording transcripts		386 79
Cost of suits		900 00
Advertising		130 07
Interest on awards by Canal Appraisers, under chap. 318, Laws of 1862		35,540 62
Interest on drafts of Canal Commissioners under chap. 318, Laws of 1862		18,964 14
Allowance by the Legislature, under chapter 458, Laws of 1862, to Stephen D. Charles, for services in the Engineer Department in 1859, on the western division		81 00
Carried forward		$761,203 91

Brought forward		$761,203 91
Alllowances by Canal Board, viz:		
To Clapp, Matthews & Waite for printing testimony and report in case of Barton claim	$247 50	
To R. H. Colburn, for services, travel and disbursements, as resident engineer, from 30th June to 28th September, 1858,	463 63	
To R. H. Colburn, for services in the Barton case	790 00	
To John Montross, on appeal from award by Canal Appraisers, made 1st March, 1861	1,096 00	
To Moses Barlow, assignee of John J. Weles, under act, chap. 424, Laws of 1859	1,500 00	
		4,097 13
Interest on loans		30,895 27
		$796,196 31
Appropriations for the enlargement of the Erie canal, overdrawn 30th September, 1861. See the last report		85,754 00
		$881,950 31
Balance on hand 30th September, 1862		51,662 07
		$933,612 38

ERIE AND CHAMPLAIN CANAL FUND.

(No. 40.)

Received, viz:		
Tolls on the Erie canal	$4,431,400 61	
Tolls on the Champlain canal	101,517 94	
		$4,532,918 55
Interest on deposits in banks		39,363 49
Rent of surplus water		6,765 00
Carried forward		$4,579,047 04

Brought forward		$4,579,047 04
Repair contractors, for tools and materials, viz:		
Jared P. Dodge, superintendent section No. 3 Erie canal	$675 50	
Edward A. Mills, superintendent section No. 12 Erie canal	783 75	
Hosch & Lowell, superintendents section No. 4 Erie canal	1,130 75	
A. McArthur, superintendent section No. 1 Champlain canal	1,840 97	
		4,430 97
Of F. A. Alberger, Canal Commissioner, for amount collected of the estate of late S. S. Whallon, Canal Commissioner, for office furniture retained		95 20
Archible Hess, superintendent, balance of account		2 86
Protest collected		87
Repair Trust Fund forfeiture by W. Baldwin, assignee of C. J. DeGraw, contractor for repairs of section No. 1, Champlain canal, of security deposited	$2,000 00	
Interest accrued	219 73	
		2,219 73
W. I. Skinner, Canal Commissioner, sale of 179½ cubic yards stone, at Kingston, (Champlain)		179 50
Balance of collectors' accounts		640 30
Errors in collectors' accounts		423 84
Recording mortgages and copy fees of the Department		542 97
		$4,587,583 28
Transferred from the fund for payment of the floating debt for the Champlain canal. See No. 31,		640 00
Transferred from the fund for the enlargement and completion of the canals (for the Champlain canal) See No. 29,		94,355 62
Carried forward		$4,682,578 90

Brought forward		$4,682,578 90
Transferred the following balances of surplus tolls, viz:		
From the Oswego canal ...... See No. 43	$86,529 41	
From the Cayuga and Seneca canal ...... See No. 45,	3,200 05	
From the Oneida river improvement ...... See No. 61,	935 30	
From the Seneca river towing path ...... See No. 63,	374 55	
From the Cayuga inlet ...... See No. 65	120 97	
		91,160 28
		$4,773,739 18
Appropriation for the enlargement of the Champlain canal, overdrawn 30th September, 1862,		4,402 66
		$4,778,141 84

(No. 41.)

Paid, viz:

For repairs and improvements, viz:		
To superintendents on Erie canal,	$54,356 90	
To superintendents on Champlain canal	21,746 37	
		$76,103 27
To contractors for repairs on Erie canal	$135,515 44	
To contractors for repairs on the Champlain canal	17,585 74	
		153,101 18
To Canal Commissioners, for ordinary repairs of Erie canal and salaries, viz:		
William I. Skinner, eastern division	$22,293 67	
Benjamin F. Bruce, middle division	10,520 87	
William W. Wright, middle division	3,912 14	
Carried forward	$36,726 68	$229,204 45

Brought forward	$36,726 68	$229,204 45
Hiram Gardner, western division,	18,493 97	
Franklin A. Alberger, west'n div'n	26,965 12	
		82,185 77
William I. Skinner, ordinary repairs of Champlain canal		18,739 51
Charles H. Sherrill, enlarging the locks on the Champlain canal		300 00
William I. Skinner, enlarging the locks on the Champlain canal		64,540 82
To collectors' of tolls, viz:		
On Erie canal	$38,901 78	
On Champlain canal	3,786 17	
		42,687 95
For salaries of weigh-masters and pay of their assistants, viz:		
To Philip T. VanCott, Albany	$576 25	
To John S. Robbins, Albany	733 30	
To George E. Lansing, West Troy	966 14	
To Amasa Copp, West Troy	1,016 05	
To Richard U. Owens, Utica	650 63	
To Harry Bushnell, Utica	796 00	
Simon V. A. Featherly, Syracuse	1,405 16	
To Richard D. Howell, Rochester	1,808 95	
To Henry C. Vandenburgh, Waterford	478 37	
		8,430 85
To Robert Campbell, Lieut. Governor, viz:		
Services	$294 00	
Travel	3,478 80	
		3,772 80
To Van R. Richmond, State Engineer and Surveyor, viz:		
Services	$1,250 00	
Travel	400 00	
		1,650 00
To William B. Taylor, State Engineer and Surveyor, viz:		
Services	$1,250 00	
Travel	100 00	
		1,350 00
Carried forward		$452,862 15

Brought forward		$452,862 15
For compensation of Canal Appraisers, See No. 83		2,200 00
For compensation of Canal Appraisers, Champlain See No. 83,		53 56
Tolls refunded and penalties remitted		2,705 40
For salary paid to Auditor of the Canal Department under chapter 177, Laws of 1861		2,500 00
For compensation of clerks of the Canal Department under chapter 177, Laws of 1861		8,000 00
To Weed, Parsons & Co., for printing for the canals, including blank books, forms, returns, &c., for collectors, superintendents, and all other canal officers		5,386 74
For publishing the minutes of the Canal Board in the Albany Argus		374 62
For advertising notices in sundry newspapers		30 37
For costs of suits		3,227 60
For allowance by the Legislature to A. Strong & Co., under act, chap. 458, Laws of 1862, for publishing abstracts, &c., in the Rochester Democrat and American in 1859 and 1860		344 18
Allowances by the Canal Board, viz:		
To James R. Thompson, for services rendered in procuring the arrest of O. C. Whitney, in 1858	$50 00	
To Lyman Holbrook, for expenses incurred in defending charges against him, as superintendent, by Solon Vandenburgh	70 88	
To city of Rochester, under chap. 506, Laws of 1851, and chap. 174, Laws of 1861, for aid in reconstructing and enlarging Platt street sewer	3,500 00	
		3,620 88
To Noone & Fitzgerald, under chap. 232, Laws of 1861, for damages from suspension of work by the State upon the single lock at Fort Ann, Champlain canal		1,000 00
Carried forward		$482,305 50

Brought forward		$482,305 50
For interest on awards, &c., (Champlain)		843 12
For interest on Canal Commissioners' drafts, (Champlain)		453 26
For recording transcripts (Champlain)		4 20
To Fort Miller Bridge Company, under contract of May 17, 1859, an annual payment for the use and repair of towing path attached to the bridge		600 00
Postage		336 20
For transportation to and from the Canal Department of returns, &c., of the canal officers:		
To American Express Company	$416 95	
To National Express Company	22 87	
To E. H. Powell	7 25	
		447 07
Sundry protests		2 55
J. Wilbur, proceeds of sale of boat Crescent City		55 50
W. H. Mink, new floor for Canal Department		40 00
W. H. Mink, repairs of desks, &c.		5 00
W. B. Sprague, Jr., stationery		123 98
John N. Parker, making boxes for blanks in 1861 and 1862		63 27
Taylor & Waterman, oil cloth		104 64
George H. Cogswell, stationery		58 84
Telegraphs		6 14
Mrs. Mink, washing towels		18 00
Repairing stoves		3 75
W. H. Mink, cleaning office		16 50
Transportation		63
Newspapers		13 07
Carpentering		3 62
Varnishing desks and oiling floor		22 19
Window shades		5 00
David Vaughn, tracings		20 00
Thos. J. Cowell, printing and binding		27 00
Map		1 25
Matches		35
Brooms		75
Carried forward		$485,581 38

Brought forward			$485,581 38
Stationery			1 25
Sundries			2 84
Directories			5 00
			$485,590 47
Transferred to sundry fund accounts to supply deficiencies of the lateral canals, to pay for repairs, &c., viz:			
Chemung canal	See No. 46,	$90,100 53	
Crooked Lake canal	48,	7,369 21	
Chenango canal	50,	21,564 25	
Black River canal	52,	14,935 27	
Genesee Valley canal	54,	41,782 77	
Oneida Lake canal	56,	2,682 33	
Baldwinsville canal	58,	142 84	
			178,577 20
Appropriations for Champlain canal overdrawn 30th September, 1861	(See last report),		32,382 82
Transferred to the Sinking Fund for the redemption of the canal debt, under art, 7, sec. 1, of the Constitution	See No. 2,		1,700,000 00
Transferred to the fund for the redemption of the General Fund debt, under art. 7, sec. 2, of the Constitution	See No. 6,		350,000 00
Transferred to the Sinking Fund, for the redemption of the canal debt, under art. 7, sec. 3, of the Constitution	See No. 4,		1,146,242 66
Transferred to the fund "for support of government"	See No. 10,		200,000 00
The "remainder," under art. 7, sec. 3, of the Constitution	See No. 36,		685,348 69
			$4,778,141 84

OSWEGO CANAL FUND.

(No. 42.)

Balance on hand 30th September, 1861		$18,409 57
Received, viz:		
Tolls	$153,006 82	
From the treasury to pay interest on loan	12,000 00	
From Robt. S. Kelsey, late superintendent, balance of account	573 06	
From Wm. Avery, repair contractor for tools and materials, on sec. 1	1,111 79	
From Chas. E. Case, repair contractor for tools and materials, on section 2	898 25	
		167,589 92
Transferred from the fund for payment of the floating debt ... See No. 31,		40,577 60
Transferred from the fund for the enlargement and completion of the canals ... See No. 29,		116,858 34
		$343,435 43

(No. 43.)

Paid, viz:		
To collectors of tolls, viz:		
Ephraim K. Evans	$605 96	
James S. Plumb	552 82	
Charles M. Lee	627 92	
P. F. Conger	581 02	
James N. Brown	2,862 13	
		$5,229 85
To superintendents of repairs:		
Robert S. Kelsey	$2,620 92	
Elliot Harroun	7,914 57	
		10,535 49
To contractors for repairs, viz:		
Henry D. Denison	$6,762 07	
William Avery	2,550 00	
Stinson Ostrander	6,503 25	
Charles E. Case	3,371 64	
		19,186 96
Carried forward		$34,952 30

Brought forward		$34,952 30
To Canal Commissioners, viz:		
John M. Jaycox, enlargement	$55,763 16	
Benjamin F. Bruce, enlargement	12,679 07	
William W. Wright, enlargement	28,410 17	
		96,852 40
Benjamin F. Bruce, ordinary repairs	$99 60	
William W. Wright, ordinary repairs	34,008 61	
		34,108 21
Allowances by the Canal Board, viz:		
Burke & Claffey, assignees under act chap. 249, Laws of 1861, on contract for parts of secs. 16 and 17	$2,685 00	
R. P. Wisner, att'y for Samuel Skinner, under chap. 418, Laws of 1860,	10,418 00	
		13,103 00
Interest on awards, etc.		942 17
Interest on drafts of the Canal Commis'ners, etc.,		488 81
Recording transcripts		15 50
Interest on loans		12,000 00
		$192,462 39
Transferred to the Erie and Champlain canals surplus tolls	See No. 40,	86,529 41
		$278,991 80
Balance on hand 30th September, 1862		64,443 63
		$343,435 43

CAYUGA AND SENECA CANAL FUND.

(No. 44.)

Received, viz:		
Tolls	$21,395 82	
George N. Case, repair contractor for tools and materials	540 00	
Forfeiture of Repair Trust Fund deposited by John Ecker, contractor for repairs	4,000 00	
Interest accrued	210 48	
		$26,146 30
Carried forward		$26,146 30

Brought forward	$26,146 30
Transferred from the fund for the payment of the floating debt — See No. 31,	478 93
Transferred from the fund for the enlargement and completion of the canals — See No. 29,	139,244 30
	$165.869 53

(No. 45.)

Paid, viz:		
To collectors of tolls, viz:		
George Hocknell	$386 18	
Charles L. Hemiup	639 37	
William A. VanVranken	709 25	
		$1,734 80
To superintendents of repairs, viz:		
Archible Hess	$403 85	
Philip P. Midler	14,396 13	
		14,799 98
To repair contractors, viz:		
John Ecker	$2,849 12	
George M. Case	1,409 58	
		4,258 70
To Canal Commissioners, viz:		
John M. Jaycox, enlargement	$43,799 34	
Benjamin F. Bruce, do	6,253 85	
William W. Wright, do	19,337 60	
William I. Skinner, do	22,021 18	
		91,411 97
William W. Wright, ordinary repairs		2,152 77
Recording transcripts		1 31
Compensation of Canal Appraisers — See No. 83,		151 14
Interest on awards, etc.		5,986 34
Interest on Canal Commissioners, drafts, etc.		695 26
		$121,192 27
Transferred to the Erie and Champlain canals surplus tolls — See No. 40,		3,200 05
		$124,392 32
Appropriations overdrawn 30th September, 1861		25,545 02
		$149,937 34
Balance on hand 30th September, 1862		15,932 19
		$165,869 53

CHEMUNG CANAL FUND.

(No. 46.)

Received, viz:		
Tolls	$19,901 96	
James Bellows, repair contractor for tools and materials	2,459 42	
		$22,361 38
Transferred from the following accounts, viz:		
The Sinking Fund to pay interest .... See No. 3,		233 33
Deficiency from the tolls of the Erie and Champlain canals .... See No. 41,		90,100 53
		$112,695 24

(No. 47.)

Paid, viz:		
To collectors of tolls, viz:		
John B. Look	$425 44	
Harris S. Benedict	324 09	
James B. Thompson	728 04	
George W. Pratt	432 30	
Ephraim P. Rogers	242 50	
Thomas McBurney	142 25	
		$2,294 62
To superintendents of repairs, viz:		
Benajah P. Bailey	$98 96	
Oliver Allen	7,530 00	
		7,628 96
To repair contractors, viz:		
Thomas W. Amsbury	$10,715 47	
James Bellows	6,933 60	
		17,649 07
To Canal Commissioners, viz:		
John M. Jaycox, ordinary repairs	$1,258 00	
Benjamin F. Bruce, do	17,690 71	
William W. Wright, do	62,963 04	
		81,911 75
Allowance by the Legislature and Contracting Board, under chap. 331, Laws of 1861, and chap. 458, Laws of 1862, to Jacob Fonda, for work done, and 15 per cent. retained on contract for repairs, and for tools taken by the State		2,977 51
Interest on loans		233 33
		$112,695 24

CROOKED LAKE CANAL.

(No. 48.)

Balance on hand 30th September, 1861........	$415 15
Received, viz:	
Tolls..	712 70
Deficiency from the tolls of the Erie and Champlain canals..................See No. 41,	7,369 21
	$8,497 06

(No. 49.)

Paid, viz:		
To collectors of tolls, viz:		
S. C. Cleveland.................	$314 20	
Joseph St. John................	321 49	
		$635 69
Oliver Allen, superintendent of repairs		2,468 94
To repair contractors, viz:		
Homer W. Randall...........................		4,692 38
To Canal Commissioners, viz:		
Benjamin F. Bruce, ordinary repairs..........		284 90
		$8,081 91
Balance on hand 30th September, 1862........		415 15
		$8,497 06

CHENANGO CANAL FUND.

(No. 50.)

Balance on hand 30th September, 1861........	$1,717 00
Received, viz:	
Tolls..	22,155 94
Transferred from the following accounts, viz:	
Sinking Fund to pay interest........See No. 3,	100 00
Deficiency from tolls of the Erie and Champlain Canals.......................See No. 41,	21,564 25
	$45,537 19

(No. 51.)

Paid, viz:		
To collectors of tolls, viz:		
William N. Case	$336 40	
Maro Hubbard	480 08	
Horatio H. Cook	435 50	
Benjamin De Voe	608 76	
		$1,860 74
To superintendents of repairs, viz:		
Edward E. Welton	$368 17	
Charles H. Smith	470 15	
Peter Terhune	377 66	
		1,215 98
To repair contractors, viz:		
Alonzo Peck & Co.	$15,223 76	
John P. Smith	5,599 92	
Josiah Brintnall	7,000 00	
		27,823 68
To Canal Commissioners, viz:		
Benjamin F. Bruce, ordinary repairs	$2,865 87	
William W. Wright, do	9,712 04	
		12,577 91
G. B. Palmer, attorney for Alson Adams, allowance by Canal Board, under chap. 206, Laws of 1860		241 88
Interest on loans		100 00
		$43,820 19
Balance on hand 30th September, 1862		1,717 00
		$45,537 19

BLACK RIVER CANAL FUND.

(No. 52.)

Balance on hand 30th September, 1861		$14,147 81
Received, viz:		
Tolls	$8,647 82	
W. B. Taylor, late resident engineer, balance of account	151 51	
L. W. Bowdish, late superintendent, balance of account	93 35	
		8,892 68
Carried forward		$23,040 49

Brought forward	$23,040 49
Transferred from the following accounts, viz:	
The Sinking Fund to pay interest....See No. 3,	2,900 00
The fund for the payment of the floating debt, See No, 31,	303 91
The fund for the enlargement and completion of the canals....See No. 29,	40,843 63
Deficiency from the tolls of the Erie and Champlain canals....See No. 41,	14,935 27
	$82,023 30

(No. 53.)

Paid, viz:		
To collectors of tolls, viz:		
Lewis C. Childs	$349 22	
William Bamber	291 63	
		$640 85
To superintendents of repairs, viz:		
Lemuel W. Bowdish	$1,489 38	
Griffith J. Griffith	694 15	
		2,183 53
To repair contractors, viz:		
Ward & McVickar	$3,797 00	
Benjamin F. Maxson	4,136 50	
E. H. Edwards	10,868 56	
		18,802 06
To Canal Commissioners, viz:		
William I. Skinner, completion		33,820 86
William I. Skinner, ordinary repairs		50 00
Edward A. Perkins, attorney, for forfeiture of security deposited by Francis M. McFarland, repair contractor, refunded under chap. 111, Laws of 1862		2,000 00
Interest on awards, &c.		173 18
Interest on Canal Commissioners' drafts, &c.		552 80
Interest on loans		2,900 00
		$61,123 28
Balance on hand, 30th September, 1862		20,900 02
		$82,023 30

GENESEE VALLEY CANAL FUND.

(No. 54.)

Received, viz:

Tolls	$28,697 27	
Wm. McArthur, repair contractor, for tools and materials	100 00	
		$28,797 27
Transferred from the following accounts, viz:		
The Sinking Fund to pay interest ... See No. 3,		13,493 33
The fund for pay't of the floating debt, See No. 31		11,509 80
The fund for the enlargement and completion of the canals ... See No. 29,		54,543 00
Deficiency from the tolls of the Erie and Champlain canals ... See No. 41,		41,782 77
		$150,126 17

(No. 55.)

Paid, viz:

To collectors of tolls, viz		
George E. Slocum	$253 55	
Lorin Coy	306 44	
William H. Thomas	373 98	
Alexander Edwards	236 32	
George A. Sanders	284 00	
John W. Deuel	264 24	
Luke R. Hitchcock	299 48	
Olcott P. Boardman	282 20	
Levi M. Gano	309 49	
		$2,609 70
To superintendents of repairs, viz:		
Daniel D. Spencer	$15,225 19	
F. H. Beckwith	233 33	
Alonzo Hawley	469 21	
Gideon Searl	333 33	
		16,261 06
To repair contractors, viz:		
Alfred C. Dodge	$440 00	
William McArthur	4,369 89	
John Lambert	29,970 00	
William McArthur	13,500 05	
		48,279 94
Carried forward		$67,150 70

Brought forward		$67,150 70
To Canal Commissioners, viz:		
Hiram Gardner, completion	$18,883 72	
Franklin A. Alberger, do	2,171 36	
		21,055 08
Hiram Gardner, extension	$4,872 07	
Franklin A Alberger, do	17,107 28	
		21,970 35
Hiram Gardner, ordinary repairs	$95 33	
Franklin A. Alberger, do	3,284 01	
		3,379 34
Hugh M. Severance, late resident engineer, balance of account		8 73
Interest on awards, &c.		2,790 68
Interest on Canal Commissioners' drafts, &c.		16 54
George Dowd, allowance by the Legislature, under act, chapter 458, Laws of 1862, for tending lock, &c.		50 00
Robert L. Dorr, for bill of costs in matter of application for mandamus, &c., by H. and H. T. McNair, executors		70 10
For compensation of Canal Appraisers. See No. 83,		61 66
Interest on loans		13,493 33
		$130,055 51
Appropriations for the canal overdrawn 30th September, 1861		11,129 79
		$141,185 30
Balance on hand 30th September, 1862		8,940 87
		$150,126 17

ONEIDA LAKE CANAL.

(No. 56.)

Received, viz:	
Tolls	$121 83
Deficiency from the tolls of the Erie and Champlain canals. See No. 41,	2,682 33
	$2,804 16

(No. 57.)

Paid, viz:

Daniel Hess, collector of canal tolls	$329 15
Archible Hess, superintendent of repairs	100 00
William R. Chapman, repair contractor	2,375 01
	$2,804 16

BALDWINSVILLE CANAL FUND.

(No. 58.)

Received, viz:

Tolls	$31 83
Deficiency from the tolls of the Erie and Champlain canals ....See No. 41,	142 84
	$174 67

(No. 59.)

Paid, viz:

To Elliot Harroun, superintendent of repairs	$174 67

FUND OF THE ONEIDA RIVER IMPROVEMENT.

(No. 60.)

Received, viz:

Tolls	$2,311 06
Transferred from the sinking fund for interest, See No. 3,	266 67
	$2,577 73

(No. 61.)

Paid, viz:

Elliot Harroun, superintendent of repairs	$447 76
John M. Jaycox, Canal Commissioner, ordinary repairs	928 00
Interest on loans	266 67
	$1,642 43
Transferred to the Erie and Champlain canals surplus tolls........See No. 40,	935 30
	$2,577 73

FUND OF THE SENECA RIVER TOWING PATH.

(No. 62.)

Received, viz:

Tolls	$374 55

(No. 63.)

Paid, viz:

Transferred to the Erie and Champlain canals surplus revenue.... See No. 40,	$374 55

FUND OF THE CAYUGA INLET.

(No. 64.)

Received, viz:

Tolls	$241 94

(No. 65.)

Paid, viz:

To the treasury, under chap. 251, Laws of 1847,	$120 97
Transferred to the Erie and Champlain canals surplus tolls.... See No. 40,	120 97
	$241 94

CANAL DEBT.

(*Under article* 7, *section* 1, *of the Constitution.*)

(No. 66.)

Erie and Champlain canals:		
Stock not bearing interest		$160 00
Redeemable as follows, viz:		
6 per cent., 1st July, 1837	$160 00	
Erie canal enlargement, viz:		
Stock bearing 6 per cent. interest,	$189,000 00	
Stock not bearing interest	3,000 00	
		192,000 00
Redeemable as follows, viz:		
5 per cent., 1st June, 1862	$3,000 00	
6 per cent., 1st July, 1864	189,000 00	
	$192,000 00	
Carried forward		$192,160 00

Brought forward		$192,160 00
Black River canal:		
Stock bearing 6 per cent. interest		20,000 00
Redeemable as follows, viz:		
6 per cent., 1st July, 1864	$20,000 00	
Genesee Valley canal:		
Stock bearing 6 per cent. interest	$91,000 00	
Stock not bearing interest	27,000 00	
		118,000 00
Redeemable as follows, viz:		
5 per cent. after 1860	$27,000 00	
6 per cent., 1st July, 1864	91,000 00	
	$118,000 00	
To supply deficiencies, viz:		
Stock bearing 6 per cent. interest	$1,739,024 76	
" 5 "	5,500,000 00	
" 7 "	1,200,000 00	
		8,439,024 76
Redeemable as follows, viz:		
7 per cent., 1st October, 1864	$1,200,000 00	
6 " 1st July, 1865	1,739,024 76	
5 " 1st October, 1868	1,500,000 00	
6 " 1st January, 1874	4,000,000 00	
	$8,439,024 76	
To pay debts due prior to first June, 1846, viz:		
Stock bearing 6 per cent. interest		100,000 00
Redeemable as follows, viz:		
6 per cent. 1st July, 1864	$100,000 00	
Total canal debt, under article 7, section 1, of the Constitution		$8,869,184 76
Of which there pays no interest		30,160 00
Canal debt, under section 1, paying interest		$8,839,024 76

(*Under article* 7, § 3 *of the Constitution.*)

For the enlargement of the Erie, Oswego, &c., viz:		
Stock bearing 6 per cent. interest		$9,000,000 00
Redeemable as follows, viz:		
6 per cent., 1st July, 1872	$2,250,000 00	
6 " 1st January, 1873	1,000,000 00	
6 " 1st July, 1873	1,250,000 00	
6 " 1st November, 1873	2,250,000 00	
6 " 1st October, 1874	2,250,000 00	
	$9,000,000 00	
For the payment of canal revenue certificates, viz:		
Stock bearing 6 per cent. interest		1,500,000 00
Redeemable as follows, viz:		
6 per cent., 1st July, 1873	$1,500,000 00	
To supply deficiencies, viz:		
Stock bearing 5 per cent. interest	$1,000,000 00	
" 6 "	500,000 00	
		1,500,000 00
Redeemable as follows, viz:		
5 per cent., 1st January, 1871	$500,000 00	
5 " " 1874	500,000 00	
6 " 1st October, 1875	500,000 00	
	$1,500,000 00	
Total canal debt under article 7, section 3, of the Constitution paying interest		$12,000,000 00

THE INTEREST ON THE FOLLOWING CANAL LOANS IS PAID BY THE GENERAL FUND UNDER ARTICLE 7, SECTION 10, OF THE CONSTITUTION, viz:

For the enlargement of the locks of the Oswego canal, viz:		
Stock bearing 6 per cent. interest		$200,000 00
Redeemable as follows, viz:		
6 per cent, 1st July, 1866	$200,000 00	
To provide for extraordinary repairs, &c., of the canals, viz:		
Stock bearing 6 per cent. interest		50,000 00
Redeemable as follows, viz:		
6 per cent., 1st July, 1865	$50,000 00	
For the Albany basin, viz:		
Stock bearing 5 per cent. interest		192,585 49
Redeemable as follows, viz:		
5 per cent., 1st July, 1866	$192,585 49	
Temporary loan, viz:		
Stock bearing 5 per cent. interest		200,000 00
Redeemable as follows, viz:		
5 per cent., 1st October, 1863	$200,000 00	
Total canal debt, the interest onwhich is paid by the General Fund		$642,585 49

(*Under article* 7, *section* 12, *of the Constitution.*)

For the payment of the floating debt, viz:		
Stock bearing 6 per cent. interest		$2,500,000 00
Redeemable as follows, viz:		
6 per cent., 1st July, 1866	$800,000 00	
6 " 1st July, 1872	800,000 00	
6 " 1st December, 1877	900,000 00	
	$2,500,000 00	
Total canal debt, under art. 7, sec. 12, of the Constitution, paying interest		$2,500,000 00

RECAPITULATION OF THE FOREGOING STATEMENT OF THE CANAL DEBT, PAYING INTEREST ON THE 30TH SEPTEMBER, 1862.

Under art. 7, sec. 1, of the Constitution	$8,839,024 76
Under art. 7, sec. 3, of the Constitution	12,000,000 00
Under art. 7, sec. 10, of the Constitution	642,585 49
Under art. 7, sec. 12, of the Constitution	2,500,000 00
	$23,981,610 25

Statement of the canal debt 30th September, 1862, showing each description of stock, the amount redeemable in each year, and the annual interest on the same.

When due.	7 per cent.	6 per cent.	5 per cent.	Total.
1837	....	$160 00	....	$160 00
1860	....	....	$27,000 00	27,000 00
1862	....	....	3,000 00	3,000 00
Pays no interest	....	$160 00	$30,000 00	$30,160 00
1863	....	....	$200,000 00	$200,000 00
1864	$1,200,000 00	$400,000 00	....	1,600,000 00
1865	....	1,789,024 76	....	1,789,024 76
1866	....	1,000,000 00	192,585 49	1,192,585 49
1868	....	....	1,500,000 00	1,500,000 00
1871	....	....	500,000 00	500,000 00
1872	....	3,050,000 00	....	3,050,000 00
1873	....	6,000,000 00	....	6,000,000 00
1874	....	2,250,000 00	4,500,000 00	6,750,000 00
1875	....	500,000 00	....	500,000 00
1877	....	900,000 00	....	900,000 00
Debt paying interest	$1,200,000 00	$15,889,024 76	$6,892,585 49	$23,981,610 25
Debt not paying interest	....	160 00	30,000 00	30,160 00
Total debt	$1,200,000 00	$15,889,184 76	$6,922,585 49	$24,011,770 25
Annual interest	$84,000 00	$953,341 49	$344,629 27	$1,381,970 76

AN ANALYSIS OF THE FOREGOING TABLE.

Principal of debt, and sections of article 7 of the Constitution.		Annual interest of the debt.	
Section 1, 7's	$1,200,000 00	$84,000 00	
6's	2,139,024 76	128,341 48	
5's	5,500,000 00	275,000 00	
			$487,341 48
Section 3, 6's	11,000,000 00	$660,000 00	
5's	1,000,000 00	50,000 00	
			710,000 00
Carried forward	$20,839,024 76		$1,197,341 48

Brought forward	$20,839,024 76		$1,197,341 48
Section 10, 6's	250,000 00	$15,000 00	
5's	392,585 49	19,629 28	
			34,629 28
Section 12, 6's	2,500,000 00	....	150,000 00
	$23,981,610 25		$1,381,970 76

The interest on the debt is about 5¾ per cent.

Of the above debt paying interest, there was held on the 30th September, 1862—

On the United States account	$22,528,782 89
On foreign account	1,452,827 36
	$23,981,610 25

(No. 67.)

Statement showing the balance on hand on the 30th September, 1862, how deposited and invested, together with the names of the accounts to which it belongs.

DEPOSITED.

Names of banks.	Amounts.
Albany City Bank	$200,141 30
Atlantic Bank, New York	8,017 05
Bank of Albion	9,913 21
Bank of Attica, Buffalo	38,152 36
Bank of Auburn	19,349 09
Bank of Bath	2,198 60
Bank of Chenango	2,180 71
Bank of Dansville	1,577 15
Bank of Fayetteville	8,684 93
Bank of Fort Edward	2,201 91
Bank of Havana	46 42
Bank of Norwich	349 03
Bank of Utica	9,568 79
Bank of West Troy	7,565 11
Bank of Whitehall	5.448 80
Buffalo City Bank	38,039 61
Carried forward	$353,434 07

Names of banks.	Amounts.
Brought forward	$353,434 07
Burnet Bank, Syracuse	7,501 53
Central Bank, Troy	7,371 97
Chemung Canal Bank, Elmira	9,220 93
Citizens' Bank, Fulton,	12,701 97
City Bank, Oswego	16,823 02
Commercial Bank, Albany	2,752,180 69
Commercial Bank, Rochester	5,511 17
Cuba Bank	11,932 56
Cuyler's Bank	5,879 18
Farmers' Bank of Amsterdam	2,262 81
Farmers' Bank of Washington County, Ft. Edward	2,213 86
Farmers' and Citizens' Bank, Brooklyn	8,441 26
Farmers' and Mechanics' Bank of Genesee, Buffalo	38,336 99
Farmers' and Mechanics' Bank, Rochester	8,635 92
Flour City Bank, Rochester	3,862 31
Fort Stanwix Bank, Rome	2,186 61
Frontier Bank, Potsdam	2,167 64
Genesee River Bank, Mt. Morris	2,229 05
George Washington Bank, Corning	3,630 59
Herkimer County Bank, Little Falls	5,612 53
Holmes & Brother	705 03
International Bank, Buffalo	12,543 32
J. N. Hungerford's Bank, Corning	3,625 28
J. T. Raplee's Bank, Penn Yan	1,332 55
Lake Ontario Bank, Oswego	16,891 88
Lyons Bank	1,516 20
Manhattan Co. Bank, New York	132,236 23
Manufacturers' Bank, Troy	7,673 29
Marine Bank, Buffalo	38,637 02
Marine Bank, Oswego	4,844 39
Market Bank, Troy	7,144 70
Mechanics' Bank, Syracuse	5,973 76
Mechanics' and Farmers' Bank, Albany	200,141 30
Merchants' Bank, Albany	5,003 92
Merchants' Bank, Syracuse	8,971 60
Mohawk Valley Bank	4,037 26
Monroe County Bank, Rochester	9,728 08
Carried forward	$3,723,142 47

Names of banks.	Amounts.
Brought forward	$3,723,142 47
Mutual Bank, Troy	7,327 57
New York and Erie Bank, Buffalo	38,583 93
New York State Bank, Albany	200,141 30
Niagara County Bank, Lockport	9,468 41
Oneida County Bank, Utica	2,735 85
Orleans County Bank, Albion	9,474 80
Oswego River Bank	12,381 79
Saratoga County Bank, Waterford	2,669 23
Schenectady Bank	1,311 41
Union Bank, Albany	16,758 86
Union Bank, Troy	7,365 83
White's Bank, Buffalo	38,912 14
Available	$4,070,273 59
Artizans' Bank, New York	$21,070 44
Bank of Albany	43,196 95
Bank of Corning	11,135 63
Bank of Hornellsville	10,554 11
Bank of the Interior, Albany	8,745 89
Canal Bank, Albany	59,252 41
Canal Bank, Lockport	11,231 20
Empire City Bank	9,986 16
Hollister Bank	14,954 58
Lockport Bank and Trust Company	8,845 00
Medina Bank	7,703 08
Niagara River Bank	1,341 40
Oliver Lee & Company's Bank	15,513 64
Pratt Bank	19,159 91
Walter Joy's Bank	60,032 06
Western Bank, Lockport	2,790 00
Unavailable	$305,512 46
Amount deposited in banks, available	$4,070,273 59
Amount deposited in banks, unavailable	305,512 46
Carried forward	$4,375,786 05

Brought forward		$4,375,786 05
INVESTED.		
Bank Fund stock	$12,743 15	
Canal stock	176,621 57	
Securities of real estate of Walter Joy's Bank	20,354 06	
Real estate, &c., of Bank of Corning	3,799 00	
		213,517 78
		$4,589,303 83
Appropriations overdrawn, viz:		
The Champlain canal	See No. 40	4,402 66
		$4,593,706 49

Of the above amount, there belongs to the Sinking Fund for redemption of the canal debt,	See No. 3,	$1,533,374 98
Sinking Fund for the General Fund debt	See No. 7	350,000 00
Sinking Fund for the redemption of the debt for the enlargement and completion of the canals.	See No. 5,	964,833 57
Sinking Fund for the redemption of the loans for the payment of the floating debt of the State.	See No, 9,	426,754 76
For the support of government	11,	200,000 00
Investment of premiums on loans	13,	24,307 63
Fund for the completion of the canals	27,	149,624 69
Fund for temporary loans	33,	1,949 82
Repair Trust Fund	35,	93,501 42
Remainder of the revenues of 1862	37,	685,348 69
Erie canal enlargement	39,	51,662 07
Oswego canal	43,	64,443 63
Cayuga and Seneca canal	45,	15,932 19
Crooked Lake canal	49,	415 15
Chenango canal	51,	1,717 00
Black River canal	53,	20,900 02
Genesee Valley canal	55,	8,940 87
		$4,593,706 49

(No. 68.)

Statement of the amount of Canal Stocks redeemed and canceled during the year ending September 30, 1862.

GENESEE VALLEY CANAL.

Date of purchase.		Of whom purchased.	Description of stock.	Amount of stock.	Amount of premium.	Interest accrued.	Total paid.
1861.							
Dec.	5.	Rev. Wm. Carmallee Evans, J. P. Morgan, I. I. Goodwin, sub. attorneys	5's, after 1860.	$5,000			$5,000,00
Jan'y	30.	Thomas Letchworth, A. Gracie King, attorney	do	15,000			15,000 00
April	24.	Oscar Henri Guebhard, James G. King's Sons, attorneys	do	3,000			3,000 00
				$23,000			$23,000 00
		TO PROVIDE FOR DEFICIENCIES IN THE SINKING FUND.					
1862.							
Jan'y	2.	J. H. Van Antwerp, cashier, J. S. Harberger, cashier, attorney	6's, 1st Jan'y, 1862.	$100,000			$100,000 00
	2.	J. Evertsen, jr., do do do	do	10,000			10,000 00
	2.	American Exchange Bank, R. G. Rolston, cashier, attorney	do	44,000			44,000 00
	2.	J. H. Van Antwerp, cashier, J. S. Harberger, cashier, attorney	do	71,000			71,000 00
	2.	Supt. Tr. Rockland County Bank	do	10,000			10,000 00
	2.	G. S. Robbins & Son	do	10,000			10,000 00
	2.	J. Warren Rogers	do	52,000			52,000 00
	2.	Joseph Lawrence, pres't	do	34,000			34,000 00
	2.	Richard Berry, pres't	do	25,000			25,000 00
	2.	Charles G. Rockwood, cashier	do	39,000			39,000 00
	2.	Jas. K. Pell	do	10,000			10,000 00
	2.	Neptune Insurance Co., N. Y., I. P. Tuppan pres't, attorney	do	10,000			10,000 00
	2.	John Kiersted, jr., pres't, R. W. Howes, pres't, attorney	do	14,000			14,000 00
	2.	Chas. A. Macy, cashier	do	5,000			5,000 00
	2.	Supt. Tr. Central Bank, Cherry Valley, H'y B. Smith, attorney	do	22,000			22,000 00
	2.	Manufacturers' & Merchants' Bank	do	4,500			4,500 00

No. 68.—Continued.

Date of purchase.	Of whom purchased.	Description of stock.	Amount of stock.	Amount of premium.	Interest accrued.	Total paid.
1862. Jan'y 2.	Mrs. E. Thompson, F. F. Thompson, attorney	6's, 1st Jan'y, 1862.	$4,000	......	....	$4,000 00
2.	Supt. Tr. Columbia Bank, Thompson Bros., attorneys	do	5,000	......	....	5,000 00
2.	A. S. Fraser	do	40,000	......	....	40,000 00
2.	Pres't, Directors and Co. of the Seventh Ward Bank	do	20,000	......	....	20,000 00
2.	Emery Thayer, W. Gay, cashier, attorney	do	2,000	......	....	2,000 00
2.	Wainwright Hardie	do	1,000	......	....	1,000 00
2.	German Savings Bank, W. Tillinghaus, pres't, attorney	do	10,000	......	....	10,000 00
3.	J. K. Du Bois and State Illinois, Tr. Bank of Metropolis, B. Murray, cash., att'y	do	25,000	......	....	25,000 00
3.	Wm. Aymar	do	5,000	......	....	5,000 00
3.	Supt. Tr. Columbia Bank, Thompson Bros., attorneys	do	5,000	......	....	5,000 00
3.	Supt. Tr. Farmers' & Mechanics' Bank, Rochester, J. R. Kearney, cashier, att'y	do	15,000	......	....	15,000 00
3.	Supt. Tr. Union Bank, Rochester, do do	do	10,000	......	....	10,000 00
3.	Isaac L. Platt	do	5,000	......	....	5,000 00
3.	J. E. Van Steenburgh, cashier	do	2,000	......	....	2,000 00
3.	H. Blydenburgh, pres't	do	9,000	......	....	9,000 00
4.	Geo. S. Coe	do	3,000	......	....	3,000 00
4.	Carpenter Vermilye	do	5,000	......	....	5,000 00
4.	H. F. Vail, cashier	do	25,000	......	....	25,000 00
7.	Commis'rs Canal Fund, in trust for Sinking Fund, J. S. Harberger, cashier, att'y	do	64,500	......	....	64,500 00
7.	Wm. B. Collins, adm'r	do	1,000	......	....	1,000 00
7.	Edward Banker	do	2,000	......	....	2,000 00
8.	J. J. Schermerhorn, E. Banker, att'y	do	2,000	......	....	2,000 00
8.	J. S. Harberger, cashier	do	12,000	......	....	12,000 00
9.	Sup. Tr. Union Bank of Medina, H. T. Morgan & Co., attorneys	do	500	......	....	500 00
9.	Roger A. Flood, president do do	do	7,000	......	....	7,000 00
9.	J. H. Frothingham, president	do	6,000	......	....	6,000 00
10.	Sup. Tr. Citizens' Bank, Fulton, H. T. Morgan & Co., attorneys	do	10,000	......	....	10,000 00
10.	Cammann & Co	do	3,000	......	....	3,000 00

	11.	Aug. C. Downing, A. S. Fraser, attorney	do	5,000			5,000 00
	11.	Sup. Tr. Manufacturers', Troy, H. T. Morgan & Co., attorneys	do	5,000			5,000 00
	11.	Rochester Savings Bank, William Kidd, attorney	do	110,000			110,000 00
	11.	Sup. Tr. Commercial Bank, Rochester, A. J. Dwight, attorney	do	5,000			5,000 00
	13.	D. R. Martin, president	do	15,000			15,000 00
	14.	G. J. Seney, cashier	do	15,000			15,000 00
	16.	Home Life Insurance Co., J. H. Frothingham, president, attorney	do	5,000			5,000 00
	17.	Sup. Tr. Lyons Bank, H. T. Morgan & Co., attorneys	do	3,000			3,000 00
	17.	Sup. Tr. Schoharie Co. Bank, do do	do	19,000			19,000 00
	18.	S. Van Duzer, president	do	4,000			4,000 00
	22.	do	do	3,500			3,500 00
	23.	Aud. St. Ill's, Tr. Cumberland Co. Bank, C. A. Macy, cashier, attorney	do	10,000			10,000 00
	27.	R. Williamson, president	do	10,000			10,000 00
	28.	Sup. Tr. J. N. Hungerford's Bank, H. T. Morgan & Co., attorneys	do	8,000			8,000 00
	30.	Sup. Tr. Commercial Bank, Rochester, A. J. Dwight, attorney	do	15,000			15,000 00
Feb'ry	4.	Tr. St. Wis. State Stock Bank, Eau Claire	do	2,000			2,000 00
	8.	J. E. Southworth, president	do	5,000			5,000 00
	10.	Sup. Tr. Flour City Bank, E. H. Vreedenburgh, attorney	do	5,000			5,000 00
	12.	Sup. Tr. H. G. Hotchkiss & Co. Bank, H. T. Morgan & Co., attorneys	do	10,000			10,000 00
	12.	Thompson Bros., J. Thompson, attorney	do	1,000			1,000 00
	14.	Sup. Tr. City Bank, Oswego, J. R. Kearney, cashier, attorney	do	5,000			5,000 00
	14.	Thompson Bros., J. Thompson, attorney	do	10,000			10,000 00
	15.	J. E. Southworth, president	do	5,000			5,000 00
	22.	G. J. Seney, cashier	do	3,000			3,000 00
	24.	Thompson Bros.	do	1,000			1,000 00
March	6.	E. B. Day, act'g G. N. W. P. Day, J. W. Lewis, cashier, attorney	do	4,000			4,000 00
	6.	do C. O. Day, do do	do	4,000			4,000 00
	7.	Sup. Tr. Fort Stanwix Bank, H. T. Morgan & Co., attorneys	do	5,000			5,000 00
	7.	Thompson Bros.	do	1,000			1,000 00
	14.	Vermilye & Co	do	15,000			15,000 00
April	2.	J. W. Benedict, treasurer	do	15,000			15,000 00
	2.	H. L. Jacques, vice-president	do	6,000			6,000 00
	3.	Aud. St. Ill's, in trust for Cumberland Co. Bank, C. A. Macy, cashier, attorney	do	10,000			10,000 00
	14.	George Ellis, cashier	do	32,500			32,500 00
	19.	Silas Bronson	do	50,000			50,000 00
May	13.	Vermilye & Co.	do	1,000			1,000 00
	19.	Aud. St. Ill's, in trust for Cumberland Co. Bank, R. W. Howes, president, att'y	do	5,000			5,000 00
	30.	Sup. Tr. Wm. Williams' Bank, G. J. Seney, cashier, attorney	do	1,000			1,000 00
June	28.	Sup. Tr. do do Wm. M. Parks, do	do	4,500			4,500 00
July	22.	Sup. Tr. do do do do	do	1,000			1,000 00

No. 68.—Continued.

Date of purchase.		Of whom purchased.	Description of stock.	Amount of stock.	Amount of premium.	Interest accrued.	Total paid.
1862.							
Aug.	21.	Sup. Tr. Wm. Williams' Bank, Wm. M. Parks, attorney	6's, 1st Jan'y, 1862.	$3,000	......	....	$3,000 00
Sept.	17.	Tr. St. Wis., in trust for the State Stock B'k, at Eau Claire, S. J. Dennis, agent, at'y	do	3,000	......	....	3,000 00
				$1,200,000	......	....	$1,200,000 00
		FOR PAYING THE DEBT AND PRESERVING THE CREDIT OF THE STATE.					
Jan'y	18.	S. Van Duzer, president	5's, 1st June, 1862.	$3,000	$15 00	$7 39	$3,022 39
Feb'ry	7.	Etienne G. J. Delepert, De Rham & Co., attorneys	do	1,100	4 12	5 72	1,109 84
	7.	Adolph F. Delepert, do do	do	900	3 37	4 68	908 05
June	2.	Jean Alphonse Favre, do do	do	3,000	......	25 00	3,025 00
	2.	Francois E. Favre, do do	do	15,000	......	125 00	15,125 00
	2.	Antoine Martin, do do	do	2,500	......	20 83	2,520 83
	2.	Etienne G. Delepert, do do	do	3,200	......	26 67	3,226 67
	2.	Philippine A. Vernes, do do	do	3,500	......	29 16	3,529 16
	2.	F. Shouburt, do do	do	4,000	......	33 33	4,033 33
	2.	Erice and J. de Bummeville, do do	do	5,000	......	41 67	5,041 67
	2.	Charles Meig, do do	do	5,000	......	41 67	5,041 67
	2.	Louise W. Y. C. de C. Rebecque, do do	do	5,300	......	44 17	5,344 17
	2.	Pierre E. Boissier, Moran Bros., do	do	3,000	......	25 00	3,025 00
	2.	Theodore Rivier do do	do	1,000	......	8 33	1,008 33
	2.	Rev. Robert House, R. Dinwiddie, attorney	do	2,700	......	22 50	2,722 50
	2.	Margaret S. T. Wainwright, do do	do	370	......	3 08	373 08
	2.	Gwynne D. Day	do	12,005	......	100 04	12,105 04
	2.	J. E. Southworth, president	do	8,700	......	72 50	8,772 50
	2.	Sup. Tr. Bank of Salem, J. D. Vermilye, cashier, attorney	do	6,200	......	51 66	6,251 66
	2.	J. H. Van Antwerp, cashier, H. T. Morgan & Co., attorneys	do	30,750	......	256 25	31,006 25
	2.	J. Q. Jones, president	do	69,000	......	575 00	69,575 00
	2.	E. Mayoubanks and Sir E. Antrobus, J. J. Goodwin, attorney	do	50,600	......	421 66	51,021 66

	2.	Ferdinand Overrman, H. & F. W. Meyer, attorneys	do	1,400	11 67	1,411 67
	2.	H. H. Reynolds, R. G. Rolston, attorney	do	500	4 16	504 16
	2.	T. W. Olcott, president, do do	do	30,300	252 50	30,552 50
	2.	J. H. Van Antwerp, cashier, J. S. Harberger, cashier, attorney	do	47,996	399 96	48,395 96
	2.	Sup. Tr. Mechanics' and Farmers' Bank, Albany, J. S. Harberger, cashier, att'y.	do	51,000	425 00	51,425 00
	2.	J. S. Harberger, cashier	do	2,781	23 17	2,804 17
	2.	H. Bodmer, Jr., Oelrichs & Co., attorney	do	5,000	41 67	5,041 67
	2.	G. W. Kruger, do do	do	10,700	89 16	10,789 16
	2.	G. I. Seney, cashier	do	5,000	41 67	5,041 67
	2.	W. B. Astor	do	8,000	66 67	8,066 67
	2.	G. S. Coe, president	do	25,000	208 33	25,208 33
	3.	Sup. Tr. Catskill Bank, G. Ellis, cashier, attorney	do	5,000	41 67	5,041 67
	3.	M. M. Freeman, president	do	19,000	158 33	19,158 33
	3.	I. Bookman	do	1,000	8 33	1,008 33
	4.	Sup. Tr. Long Island Bank, W. S. Herriman, president, attorney	do	131,000	1,091 66	132,091 66
	4.	Sup. Tr. Brooklyn Bank, P. S. Henderson, cashier, attorney	do	20,000	166 67	20,166 67
	5.	Sup. Tr. Suffolk County Bank, G. S. Adams, attorney	do	5,000	41 67	5,041 67
	6.	William Aymar	do	2,231	18 58	2,249 58
	6.	Sup. Tr. Bank of Orange County, A. S. Murray, president, attorney	do	2,750	22 91	2,772 91
	6.	Hannah and Susannah Goodwin, Mary Watt, attorney	do	4,500	37 50	4,537 50
	7.	Pres. and Tr. Pacific Mail S. S. Company	do	6,504	54 20	6,558 20
	7.	Sup. Tr. Fort Stanwix Bank, B. Murray, cashier, attorney	do	500	4 16	504 16
	7.	do Chester Bank, S. Van Duzer, president, do	do	39,224	326 86	39,550 86
	7.	A. A. C. F. F. De Otrante, J. G. King's Sons, attorneys	do	5,500	45 83	5,545 83
	9.	Supt. Tr. Bank of Whitestown, Vermilye & Co. attorney	do	10,000	83 33	10,083 33
	9.	Robert Neilson, I. H. Brower, do	do	26,000	216 67	26,216 67
	10.	Sup. Tr. Commercial Bank, G. Falls, G. I. Seney, cashier, attorney	do	1,100	9 17	1,109 17
	11.	Sup. Tr. Mechanics' Bank, New York, W. H. Cox, do do	do	2,000	16 67	2,016 67
	14.	Sup. Tr. Central Bank, Cherry Valley, G. I. Seney, do do	do	10,000	83 33	10,083 33
	16.	Sup. Tr. Bank of Chemung, R. G. Rolston, do	do	500	4 17	504 17
	19.	Rt. Hon. Arch. John, Earl of Roseberg, J. P. Morgan do	do	1,800	15 00	1,815 00
	20.	Sup. Tr. Bank of Cohoes, R. H. Lowry, cashier, do	do	3,351	27 93	3,378 93
	25.	Sup. Tr. Commercial Bank, Rochester, Charles A. Meigs, do	do	7,000	58 34	7,058 34
	25.	Sup. Tr. Atlantic Bank, N. Y., J. E. Southworth, president, do	do	21,500	179 17	21,679 17
	26.	I. K. Mitchell, Ewing Trustees, Ephraim Clark, Jr., do	do	8,000	66 67	8,066 67
	27.	Sup. Tr. Merchants' and Mechanics' Bank, Troy, R. H. King, do	do	3,100	25 83	3,125 83
	27.	Frank Temple, Palmer, D. Thompson, president, do	do	7,000	58 34	7,058 34
	28.	Charles U. Macy	do	2,500	20 83	2,520 83
	30.	Sup. Tr. Genesee Valley Bank, Fitzhugh & Jenkins, attorney	do	7,000	58 33	7,058 33
July	3,	Sup. Tr. Commercial Bank, Clyde, G. W. Cuyler, attorneys	do	6,500	54 17	6,554 17
	7.	Sup. Tr. Cuyler's Bank, Cammann & Co., attorneys	do	25,000	208 34	25,208 34
	8.	Sup. Tr. Bank of Geneva, Satterlee & Co., do	do	9,000	75 00	9,075 00

(No. 70.)

STATEMENT

Of Receipts and Payments on account of the enlargement of the Erie Canal, in each year, up to 30th September, 1862.

YEAR.	Loans.	Premiums on loans.	Discount on loans.	RECEIVED.							
				Avails of loans.	Temporary loans.	Surplus tolls of Erie canal	Fund for completion of the canals, and for payment of the floating debt.	Constitutional Sinking Fund.	Interest on deposits and investments.	Miscellaneous.	Total.
1835...	....	....	....	....	....	$31,810 70	....	....	....	....	$31,810 70
1836...	....	....	....	....	....	53,218 83	....	....	....	....	53,218 83
1837...	....	....	....	....	....	636,312 17	....	....	....	....	636,312 17
1838...	$1,000,000 00	$5,050 00	....	$1,005,050 00	....	174,694 90	....	....	....	....	1,179,744 90
1839...	1,500,000 00	....	....	1,500,000 00	....	803,178 22	....	....	$7,343 20	$7,312 75	2,317,834 17
1840...	3,000,000 00	....	$100,000 00	2,900,000 00	$200,000 00	369,170 76	....	....	4,700 06	3,040 81	3,476,911 63
1841...	1,441,119 29	....	125,519 29	1,315,600 00	1,200,000 00	526,262 12	....	....	14,505 28	3,523 75	3,059,891 15
1842...	1,838,082 95	....	....	1,838,082 95	....	1,348,995 69	....	....	....	2,436 36	3,189,515 00
1843...	569,797 76	16,775 00	....	586,572 76	....	507,295 17	....	....	....	1,041 23	1,094,909 16
1844...	438,000 00	5,388 50	....	443,388 50	....	524,159 82	....	....	....	2,254 62	969,802 94
1845...	152,000 00	897 00	....	152,897 00	....	541,727 24	....	....	....	1,180 05	695,804 29
1846...	189,000 00	14,988 80	....	203,988 80	....	550,920 50	....	....	....	1,047 87	755,957 17
1847...	....	....	....	....	....	182,379 63	$367,620 37	$559,110 93	....	1,467 47	1,110,578 40
1848...	....	....	....	....	....	....	1,255,946 80	1,868,492 35	17,829 74	6,453 12	3,148,722 01
1849...	....	....	....	....	....	....	977,860 10	1,033,093 51	12,155 32	38,774 87	2,061,883 80
1850...	....	....	....	....	....	....	574,854 56	541,637 31	12,580 03	5,940 66	1,135,012 56
1851...	....	....	....	....	....	....	510,364 14	438,254 98	12,257 24	7,315 60	968,191 96
1852...	....	....	....	....	....	....	939,834 89	419,488 02	8 242 32	16,869 25	1,384,434 48
1853...	....	....	....	....	....	....	682,279 44	419,488 02	8,242 32	155,136 92	1,265,146 70
1854...	....	....	....	....	....	....	2,004,001 83	880,327 22	8,422 32	113,979 39	3,006,730 76
1855...	....	....	....	....	....	....	1,826,611 56	438,515 39	37,522 32	111,782 48	2,414,431 75
1856...	....	....	....	....	....	....	1,808,081 88	4,125,792 39	31,104 81	34,179 48	5,999,158 56

No. 70.—Continued.

YEAR.	Loans.	Premiums on loans.	Discount on loans.	RECEIVED.							
				Avails of loans.	Temporary loans.	Surplus tolls of Erie canal.	Fund for completion of the canals, and for payment of the floating debt.	Constitutional Sinking Fund.	Interest on deposits and investments.	Miscellaneous.	Total.
1857...	....	....	....	....	....	....	$1,803,000 00	$291,773,02	$20,417 53	$361,614 13	$2,476,804 68
1858...	$200,000 00	$1,825 00	....	$201,825 00	....	....	1,810,599 99	2,280,797 32	....	19,991 14	4,313,213 45
1859...	....	....	....	....	....	....	511,557 83	207,935 10	....	19,671 40	739,164 33
1860...	....	....	....	....	....	....	2,152,563 59	649,159 69	....	7,779 27	2,809,502 55
1861...	....	....	....	....	....	....	398,933 47	83,417 00	....	11,991 67	494,342 14
1862...	....	....	....	....	....	....	889,305 91	617,895 27	....	13,411 20	1,520,612 38
Total..	$10,328,000 00	$44,924 30	$225,519 29	$10,147,405 01	$1,400,000 00	$6,250,125 75	$18,513,416 36	$14,855,177 52	$195,322 49	$948,195 49	$52,309,642 62

No. 70.—Continued.

YEAR.	PAID.							
	Loans.	Temporary loans.	Interest on loans.	Interest on canal revenue certificates.	Canal Commissioners.	Premiums of purchase and investment of stock.	Miscellaneous.	Total.
1835					$31,810 70			$31,810 70
1836					53,218 83			53,218 83
1837					636,312 17			636,312 17
1838			$16,372 93		1,163,196 12		$175 85	1,179,744 90
1839			77,832 20		2,234,839 93		5,162 04	2,317,834 17
1840			231,190 72		3,232,370 66		13,350 25	3,476,911 63
1841		$200,000 00	335,473 36		2,518,309 72		6,108 07	3,059,891 15
1842		1,200,000 00	459,985 03		1,521,152 51		8,377 46	3,189,515 00
1843	$6,000 00		507,295 17		530,801 54		20,534 60	1,064,631 31
1844			524,159 82		418,692 06		37,224 90	980,076 78
1845			541,727 24		155,130 43		8,381 91	705,239 58
1846			550,920 50		70,012 35		48,656 61	669,589 46
1847			559,110 93		62,331 30		11,194 81	632,637 04
1848	1,337,940 37		526,713 52		634,573 08	$3,829 25	27,417 17	2,530,473 39
1849	581,124 69		451,968 82		1,000,323 97		25,206 37	2,058,623 85
1850	74,948 00		419,488 02		1,365,695 00		14,919 08	1,875,050 10
1851	600 00		419,488 02		977,703 68		26,749 08	1,424,540 78
1852			419,488 02	$21,540 51	913,148 64		30,257 31	1,384,434 48
1853			419,488 02	135,000 00	555,139 97		29,561 76	1,139,189 75
1854	459,025 00		411,988 02	90,000 00	582,443 11		24,558 85	1,568,014 98
1855	40,975 00		389,488 02	90,000 00	2,004,300 51		27,926 19	2,552,689 72
1856	3,874,383 00		239,488 02		3,168,676 89		93,935 30	7,376,483 21
1857	102,285 00		189,488 02		2,202,705 33		31,416 44	2,525,894 79
1858	2,119,128 29		164,169 04		1,366,128 28		455,944 39	4,105,370 00
1859	129,723 00		88,212 10		428,995 23		108,820 42	755,750 75
1860	580,290 65		68,869 04		2,210,216 11		47,760 04	2,907,135 84
1861	42,577 00		40,840 00		561,138 38		29,164 50	673,719 88
1862	587,000 00		30,895 27		685,329 89		79,971 15	1,383,196 31
Total	$9,936,000 00	$1,400,000 00	$8,084,139 85	$336,540 51	$31,284,696 39	$3,829 25	$1,212,774,55	$52,257,980 55

Balance on hand 30th September, 1862........................ $51,662 07, making a total of.. $52,309,642 62

UNIV. OF CALIFORNIA

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(No. 71.)

STATEMENT

Of Receipts and Payments, on account of the Oswego Canal, in each year, up to September 30, 1862, inclusive, viz :

YEAR.	Loans.	Premium on loans.	RECEIVED.						
			Avails of loans.	Erie and Champlain tolls.	Tolls.	Sales of land.	Rent of surplus water.	Miscellaneous.	Total.
1826	$227,000 00		$227,000 00			$29,698 82			$256,698 82
1827						2,124 19			2,124 19
1828	210,000 00	$2,805 00	212,805 00		$2,057 82	79,748 59			294,611 41
1829					9,071 93	34,257 86	$723 70		44,053 49
1830					12,430 01	33,508 76	825 00		46,763 77
1831*					11,465 20	11,870 75	1,571 83	$3,992 67	28,900 45
1832					16,610 65	47 58	325 00		16,983 23
1833					22,965 26	221 81	325 00		23,512 07
1834					22,174 13	749 39	325 00		23,248 52
1835					26,267 09	456 42	325 00		27,048 51
1836					29,359 93	6,539 80	325 00	151 08	36,375 81
1837					24,556 97	8,898 00	325 00		33,779 97
1838					22,961 40	475 00	325 00		23,761 40
1839					32,593 80	4,360 00	325 00		37,278 80
1840					29,166 71		325 00		29,491 71
1841					34,630 03		325 00		34,955 03
1842					35,878 82	131 00			36,009 82
1843					31,914 21				31,914 21
1844					50,013 24				50,013 24
1845					53,831 17				53,831 17
1846				$421,304 00	60,101 35				481,405 35
1847				100,000 00	70,839 01				170,839 01
1848					71,564 58			6,000 00	77,564 58
1849					86,139 66			6,000 00	92,139 66
1850					94,524 17			5,448 97	99,973 14
1851					104,366 58				104,366 58
1852	200,000 00	18,885 00	218,885 00		82,951 22			10,764 62	312,600 84

1853					88,839 97			65,841 57	154,681 54
1854					81,266 00			172,966 68	254,232 68
1855					64,954 15			197,187 18	262,141 33
1856					96,136 22			261,982 70	358,118 92
1857					105,141 39			293,120 04	398,261 43
1858					83,939 46			390,581 08	474,520 54
1859					69,348 37			136,544 62	205,892 99
1860					109,840 03			352,522 14	462,362 17
1861					131,458 38			116,820 09	248,278 47
1862					153,006 82			172,019 04	325,025 86
Total	$637,000 00	$21,690 00	$658,690 00	$521,304 00	$2,022,365 73	$213,087 97	$6,370 53	$2,191,942 48	$5,613,760 71
Deficiencies paid by the General Fund and the Erie and Champlain canals									669,246 36
									$6,283,007 07

* 9 months.

No. 71.—Continued.

OSWEGO CANAL.

YEAR.	DEFICIENCIES.		PAID.							
	Paid by the General Fund.	Paid by the E. and C. canals.	Principal of loans.	Surplus tolls E. and C. canals.	Interest on loans.	Canal Commissioners.	Superintendents of repairs.	Expenses of collectors and inspectors.	Miscellaneous.	Total.
1826					$5,083 81	$237,015 57				$242,099 38
1827					11,350 00	175,221 00				186,571 00
1828					18,917 35	83,774 46	$8,418 00		$500 00	111,609 81
1829					21,850 00	43,319 99	13,186 40	$942 94	400 04	79,699 37
1830	$16,062 18				21,850 00	3,310 00	12,972 51	1,837 25	364 54	40,334 30
1831*	13,683 53		$9,653 00		16,146 18		8,860 48	1,866 77	6,057 55	42,583 98
1832	17,892 61				21,367 36		12,507 99	1,974 39	1,657 88	37,507 62
1833	13,738 82				21,367 36		11,236 72	2,015 03		34,619 11
1834	12,649 83				21,367 36		12,522 48	2,008 51		35,898 35
1835	9,028 24				21,216 28		12,747 26	2,044 97	67 24	36,075 75
1836	43,942 97		6,043 00		21,065 20		51,064 14	2,147 44		80,319 78
1837	44,857 31				21,065 20	165 00	54,625 00	2,616 81	165 27	78,637 28
1838	54,460 70				21,065 20	1,156 21	53,997 56	2,003 13		78,222 10
1839	11,497 62				21,665 20		24,624 60	3,086 62		48,776 42
1840	30,760 33				21,065 20		36,198 40	2,988 44		60,252 04
1841		$15,345 08			21,065 20		26,241 95	2,992 96		50,300 11
1842		18,383 59			21,065 20		30,189 57	3,138 64		54,393 41
1843		14,659 45			21,065 20		22,741 60	2,766 86		46,573 66
1844		7,767 60			21,065 20		27,410 68	2,774 31	6,530 65	57,780 84
1845		16,889 06			21,065 25		46,531 82	3,123 21		70,720 23
1846		13,506 25	387,248 45		16,041 54		54,273 11	3,263 75	29 20	460,856 05
1847			34,055 55	$27,370 85			39,439 41	3,228 30	800 45	104,894 56
1848		6,231 19					74,093 10	3,690 67	12 00	77,795 77
1849				43,873 70		4,939 70	33,470 43	3,855 83		86,139 66
1850		21,288 32				82,507 60	29,631 44	3,598 45		115,737 49
1851				4,907 20		60,546 29	30,913 20	4,775 91	3,223 98	104,366 58
1852		27,161 52			8,186 30	75,652 43	40,972 84	4,468 08	2,538 95	131,818 62
1853		104,050 57			12,000 00	166,726 53	39,322 17	4,748 09	200,478 45	422,875 24

1854	....	100,000 00	....	....	12,000 00	308,087 93	67,247 64	5,734 16	101 00	393,170 73
1855	....	35,282 52	....	....	12,000 00	327,307 14	64,635 15	5,708 23	1,503 54	411,154 06
1856	....	....	....	30,596 21	12,000 00	257,828 62	50,529 15	6,010 86	710 40	366,675 24
1857	....	....	....	15,641 95	12,000 00	214,921 60	83,267 97	6,231 47	66,198 44	398,261 43
1858	....	20,207 07	....	....	12,000 00	181,564 60	97,565 51	6,668 65	42,646 48	340,445 24
1859	....	....	....	7,139 69	12,000 00	161,053 67	44,427 25	5,114 67	18,664 87	248,400 15
1860	....	....	....	60,547 16	12,000 00	421,088 67	5,264 93	7,585 87	14,561 35	521,047 98
1861	....	....	....	98,040 83	12,000 00	140,281 93	3,776 53	5,666 25	23,192 76	282,958 30
1862	....	....	....	86,529 41	12,000 00	130,960 61	10,535 49	5,229 85	33,736 44	278,991 80
Total	$268,754 14	$400,672 22	$437,000 00	$374,647 00	$535,395 54	$3,077,429 57	$1,244,442,48	$125,907 37	$423,741 48	$6,218,563 44
Balance on hand 30th September, 1862										64,443 63
										$6,283,007 07

* 9 months

No. 71.—Continued.

OSWEGO CANAL.

YEAR.	DEFICIENCIES.		PAID.							
	Paid by the General Fund.	Paid by the E. and C. canals.	Principal of loans.	Surplus tolls E. and C. canals.	Interest on loans.	Canal Commissioners.	Superintendents of repairs.	Expenses of collectors and inspectors.	Miscellaneous.	Total.
1826					$5,083 81	$237,015 57				$242,099 38
1827					11,350 00	175,221 00				186,571 00
1828					18,917 35	83,774 46	$8,418 00		$500 00	111,609 81
1829					21,850 00	43,319 99	13,186 40	$942 94	400 04	79,699 37
1830	$16,062 18				21,850 00	3,310 00	12,972 51	1,837 25	364 54	40,334 30
1831*	13,683 53		$9,653 00		16,146 18		8,860 48	1,866 77	6,057 55	42,583 98
1832	17,892 61				21,367 36		12,507 99	1,974 39	1,657 88	37,597 62
1833	13,738 82				21,367 36		11,236 72	2,015 03		34,619 11
1834	12,649 83				21,367 36		12,522 48	2,008 51		35,898 35
1835	9,028 24				21,216 28		12,747 26	2,044 97	67 24	36,075 75
1836	43,942 97		6,043 00		21,065 20		51,064 14	2,147 44		80,319 78
1837	44,857 31				21,065 20	165 00	54,625 00	2,616 81	165 27	78,637 28
1838	54,460 70				21,065 20	1,156 21	53,997 56	2,003 13		78,222 10
1839	11,497 62				21,065 20		24,624 60	3,086 62		48,776 42
1840	30,760 33				21,065 20		36,198 40	2,988 44		60,252 04
1841		$15,345 08			21,065 20		26,241 95	2,992 96		50,300 11
1842		18,383 59			21,065 20		30,189 57	3,138 64		54,393 41
1843		14,659 45			21,065 20		22,741 60	2,766 86		46,573 66
1844		7,767 60			21,065 20		27,410 68	2,774 31	6,530 65	57,780 84
1845		16,889 06			21,065 25		46,531 82	3,123 21		70,720 23
1846		13,506 25	387,248 45		16,041 54		54,273 11	3,263 75	29 20	460,856 05
1847			34,055 55	$27,370 85			39,439 41	3,228 30	800 45	104,894 56
1848		6,231 19					74,093 10	3,690 67	12 00	77,795 77
1849				43,873 70		4,939 70	33,470 43	3,855 83		86,139 66
1850		21,288 32				82,507 69	29,631 44	3,598 45		115,737 49
1851				4,907 20		60,546 29	30,913 20	4,775 91	3,223 98	104,366 58
1852		27,161 52			8,186 30	75,652 43	40,972 84	4,468 08	2,538 95	131,818 62
1853		104,050 57			12,000 00	166,726 53	39,322 17	4,748 09	200,478 45	422,875 24

1854		100,000 00			12,000 00	308,087 93	67,247 64	5,734 16	101 00	393,170 73
1855		35,282 52			12,000 00	327,307 14	64,635 15	5,708 23	1,503 54	411,154 06
1856				30,596 21	12,000 00	257,828 62	59,529 15	6,010 86	710 40	366,675 24
1857				15,641 95	12,000 00	214,921 60	83,267 97	6,231 47	66,198 44	398,261 43
1858		20,207 07			12,000 00	181,564 60	97,565 51	6,668 65	42,646 48	340,445 24
1859				7,139 69	12,000 00	161,053 67	44,427 25	5,114 67	18,664 87	248,400 15
1860				60,547 16	12,000 00	421,088 67	5,264 93	7,585 87	14,561 35	521,047 98
1861				98,040 83	12,000 00	140,281 93	3,776 53	5,666 25	23,192 76	282,958 30
1862				86,529 41	12,000 00	130,960 61	10,535 49	5,229 85	33,736 44	278,991 80
Total	$268,754 14	$400,672 22	$437,000 00	$374,647 00	$535,395 54	$3,077,429 57	$1,241,442,48	$125,907 37	$423,741 48	$6,218,563 44
Balance on hand 30th September, 1862										64,443 63
										$6,283,007 07

* 9 months

(No. 72.)

STATEMENT

Of the Receipts and Payments on account of the Cayuga and Seneca Canal, in each year, up to September 30, 1862, inclusive, viz:

YEAR.	Loans.	Premiums on loans.	RECEIVED.						DEFICIENCIES.	
			Avails of loans.	† From other funds to redeem stock.	From Sink'g Fund to pay interest.	Tolls.	Miscellaneous.	Total.	Paid by the General Fund.	Paid by Erie and Champlain canals.
1826	$150,000 00	$9,000 00	$159,000 00			$2,820 75		$161,820 75		
1827						155 19		155 19		
1828										
1829	87,000 00		87,000 00			8,370 24		95,370 24		
1830						13,087 51		13,087 51	$22,006 11	
1831*						8,859 48		8,859 48	7,757 21	
1832						12,375 77		12,375 77	5,284 93	
1833						15,591 50		15,591 50	5,826 44	
1834						18,053 14		18,053 14	3,761 76	
1835						20,192 61		20,192 61	3,352 51	
1836						19,914 53	$47 50	19,962 03	19,662 70	
1837						16,648 77		16,648 77	27,177 52	
1838						17,488 82		17,488 82	15,517 62	
1839						19,354 67		19,354 67	17,890 68	
1840						17,787 29		17,787 29	18,259 96	
1841						22,445 46		22,445 46		$9,299 84
1842						17,992 67		17,992 67		20,909 42
1843						17,938 40		17,938 40		6,319 24
1844						23,054 19		23,054 19		4,265 11
1845						28,881 48		28,881 48		
1846				$143,470 05		29,395 23		172,865 28		
1847					$4,350 00	26,908 78		31,258 78		

1848					4,350 00	28,470 86		32,820 86		
1849				71,886 00	3,262 50	27,735 44		102,883 94		37,502 70
1850				15,114 00		27,589 59	18,328 18	61,031 77		36,258 09
1851						26,258 40	7,038 48	33,296 88		
1852						22,524 38		22,524 38		8,499 33
1853						25,169 84	21,550 00	46,719 84		2,651 01
1854						24,808 90	100,553 00	125,361 90		
1855						21,915 81	102,000 00	123,915 81		
18[illegible]						20,919 78	131,728 46	152,648 24		
1857						19,457 35	166,585 09	186,042 44		
1858						14,400 67	191,239 37	205,640 04		19,582 16
1859						17,449 54	45,271 29	62,720 83		
1860						20,089 09	140,044 72	160,133 81		
1861						18,778 32	72,411 21	91,189 53		3,578 69
1862						21,395 82	144,473 71	165,869 53		
Total	$237,000 00	$9,000 00	$246,000 00	$230,470 05	$11,962 50	$694,280 27	$1,141,271 01	$2,323,983 83	$146,497 44	$148,865 59
Deficiencies paid by the General Fund and the Erie and Champlain canals								295,363 03		
								$2,619,346 86		

* 9 months.

† From the Erie and Champlain canal tolls, $111,309.72; from railroad tolls, $32,160.33=$143,470.05.

No. 72.—Continued.

CAYUGA AND SENECA CANAL.

YEAR.	PAID.								
	Principal of loans.	Interest on loans.	Surplus tolls on Erie and Champlain canals.	Canal Commissioners.	Seneca Lock Navigation Company.	Superintendents of repairs.	Collectors.	Miscellaneous.	Total.
1826		$3,873 28		$8,094 47	$34,095 83		$255 83		$46,319 41
1827		7,500 00		45,292 70	19,776 05			$145 23	72,713 98
1828		7,500 00		90,918 54				8,481 87	106,900 41
1829		9,956 55		20,783 50		$8,038 94		2,331 00	41,109 99
1830		11,850,00		6,885 55		5,833 96	826 50		25,396 01
1831*		8,887 50				3,301 39	822 00	3,605 80	16,616 69
1832		11,850 00		100 00		4,132 85	799 17	200 00	17,082 02
1833		11,850 00				9,338 71	807 91		21,996 62
1834		11,850 00		90 00		8,926 17	948 73		21,814 90
1835		11,850 00				10,275 83	1,412 96	6 33	23,545 12
1836		11,850 00				26,301 78	1,422 95	50 00	39,624 73
1837		11,850 00				30,471 56	1,459 73	45 00	43,826 29
1838		11,850 00				19,898 53	1,166 16	91 75	33,006 44
1839		11,850 00				23,594 36	1,712 01	88 98	37,245 35
1840		11,850 00				22,656 16	1,541 09		36,047 25
1841		11,850 00		2,055 41		16,330 33	1,509 56		31,745 30
1842		11,850 00		10,819 24		14,708 75	1,524 10		38,902 00
1843		11,850 00				10,953 48	1,454 16		24,257 64
1844		11,850 00		4 52		14,127 13	1,337 65		27,319 30
1845		11,850 00				13,853 68	1,496 66	56 90	127,257 24
1846	$150,000 00	9,975 00				12,947 02	1,567 50		174,489 52
1847		4,350 00	$10,377 25	756 40		14,099 37	1,526 51	149 25	31,258 78
1848		4,350 00	13,543 22			13,048 47	1,390 87	488 30	32,820 86
1849	71,886 00	3,262 50		51,932 60		11,923 64	1,280 00	101 90	140,386 64
1850	15,114 00			70,219 79		10,780 52	1,175 55		97,289 86
1851			3,737 58	7,038 48		20,894 51	1,547 81	78 50	33,296 88
1852				2,096 00		27,387 80	1,452 58	87 33	31,023 71
1853				14,223 35		14,502 06	1,530 29	15 15	30,270 85

1854........	....	....	6,070 89	64,246 84	....	16,834 52	1,903 49	....	87,055 74
1855........	....	....	11,187 33	117,821 09	....	10,557 72	2,170 70	....	141,736 90
1856........	....	....	8,278 65	168,797 78	....	10,082 85	2,558 28	515 75	190,233 31
1857........	....	....	3,734 23	136,589 23	....	12,688 50	3,034 62	29,995 81	186,042 44
1858........	....	....	....	124,207 79	....	30,872 03	3,111 29	67,031 09	225,222 25
1859........	....	....	8,276 51	36,840 22	....	5,278 55	2,397 46	30,472 45	83,265 19
1860........	....	....	11,569 04	135,590 78	....	131 24	2,644 40	3,722 16	153,657 62
1861........	....	....	....	84,308 31	....	17,010 38	2,307 26	2,619 12	106,245 07
1862........	....	....	3,200 05	93,564 74	....	14,799 98	1,734 80	11,092 75	124,392 32
Total...	$237,000 00	$237,404 83	$79,974 75	$1,293,277 38	$53,871 88	$486,582 77	$53,830 64	$161,472 42	$2,603,414 67
Balance on hand 30th September, 1862........									15,932 19
									$2,619,346 86

* 9 months.

(No. 73.)

STATEMENT

Of Receipts and Payments on account of the Chemung Canal, in each year, up to September 30, 1862, *inclusive, viz :*

YEAR.	Loans.	Premiums on loans.	Discount on loans.	RECEIVED.						
				Avails of loans.	Temporary loans.	From Sinking Fund.	Interest on deposits.	Tolls.	Miscellaneous.	Total.
1830	$150,000 00	$15,694 00		$165,694 00						$165,694 00
1831*	140,263 00	21,179 71		161,442 71					$2,818 66	164,261 37
1832									1,057 66	1,057 66
1833	25,737 00	4,506 55		30,243 55					2,072 98	32,316 53
1834								$2,398 39		2,398 39
1835								4,153 07	27 40	4,180 47
1836								5,078 37	275 00	5,353 37
1837								4,342 99	22 69	4,365 68
1838								4,478 01		4,478 01
1839								4,767 62		4,767 62
1840			$14,292 23					5,011 50		5,011 50
1841	114,292 23			100,000 00			$526 39	7,158 18		107,684 57
1842	172,830 24			172,830 24	$20,000 00			7,206 28		200,036 52
1843	53,478 11			53,478 11				9,188 51		62,666 62
1844	7,000 00			7,000 00				12,950 92		19,950 92
1845								20,281 70		20,281 70
1846								15,862 99		15,862 99
1847						$35,934 59		13,677 28		49,611 87
1848						35,934 59		16,821 58		52,756 17
1849						172,647 73		16,048 96	7,120 88	195,817 57
1850						296,105 18		16,276 54	14,194 20	326,575 92
1851						53,066 32		15,986 04	2,620 00	71,672 36
1852						11,177 76		15,683 31		26,861 07
1853						10,394 21		20,810 23		31,204 44
1854						10,394 21		19,635 35		30,029 56

1856						10,394 21		17,111 13	*1,744 11	29,249 45
1857						10,394 21		17,101 71		27,495 92
1858						10,394 21		13,347 95		23,742 16
1859						10,394 21		16,868 66	606,27	27,869 14
1860						63,070 15		18,579 46	35 78	81,685 39
1861						135 033 11		15,319 04	72	150,352 87
1862						7,233 33		19,901 96	2,459 42	29,594 71
Total	$663,600 58	$41,380 26	$14,292 23	$690,688 61	$20,000 00	$882,962 23	$526 39	$375,819 64	$42,027 40	$2,012,024 27
Deficiencies paid by the General Fund and the Erie and Champlain canals										1,189,358 76
										$3,201,383 03

* 9 months.

No. 73.—Continued.

YEAR.	DEFICIENCIES.		PAID.							
	Paid by the General Fund.	Paid by the Erie and Champlain canals.	Principal of loans.	Temporary loans.	Interest on loans.	Canal Commissioners.	Superintendents of repairs.	Collectors.	Miscellaneous.	Total.
1830	....	....	....	....	$3,125 00	$69,190 00	....	....	....	$72,315 00
1831*	....	....	....	....	7,378 29	148,291 57	....	....	$2 10	155,671 96
1832	....	....	....	....	14,513 16	75,410 47	....	....	16 05	89,939 68
1833	$13,730 28	....	....	....	14,891 21	47,793 38	$26,448 53	....	400 00	89,533 20
1834	40,723 55	....	....	....	15,800 04	2,258 91	23,703 48	$696 48	263 03	42,721 94
1835	23,841 29	....	....	....	15,800 04	9 08	11,175 89	1,036 75	....	28,021 76
1836	21,107 70	....	....	....	15,800 03	....	9,623 16	1,037 88	....	26,461 07
1837	31,278 06	....	....	....	15,800 00	3,558 79	15,193 82	1,091 13	....	35,643 74
1838	29,833 11	....	....	....	15,800 00	1,859 91	12,106 16	992 97	3,552 08	34,311 12
1839	26,536 03	....	....	....	15,800 00	....	14,315 71	1,187 94	....	31,303 65
1840	24,094 57	....	....	....	15,800 00	68 50	11,969 24	1,268 33	....	29,106 07
1841	....	$35,702 40	....	....	18,535 21	100,056 81	23,175 22	1,201 54	103 39	143,072 17
1842	....	53,151 75	$7,000 00	....	25,830 21	185,987 49	33,451 59	1,076 23	157 55	253,503 07
1843	....	41,086 27	8,000 00	$20,000 00	34,629 11	25,417 46	14,486 27	1,159 40	60 65	103,752 89
1844	....	35,985 80	....	....	35,678 69	3,467 07	12,172 23	1,085 80	224 60	52,628 39
1845	....	34,100 95	....	....	35,862 88	9 90	17,280 27	1,239 50	576 00	54,968 55
1846	....	36,225 87	....	....	35,944 31	1,646 00	14,689 55	1,455 00	109 00	53,843 86
1847	....	7,730 12	....	....	35,934 59	4,360 86	15,485 39	1,561 15	13 01	57,355 00
1848	....	12,789 76	....	....	35,934 59	328 66	27,080 33	2,030 00	172 35	65,545 93
1849	....	23,040 32	139,148 21	....	33,499 49	19,876 96	23,897 06	2,136 00	1,254 56	219,812 31
1850	....	54,154 10	272,724 64	....	23,380 54	53,768 39	28,885 79	1,896 21	74 45	380,730 02
1851	....	37,426 19	42,495 06	....	10,571 26	11,044 92	42,330 76	2,566 35	90 20	109,098 55
1852	....	21,681 48	780 30	....	10,397 46	2,144 06	32,952 17	2,198 36	70 20	48,542 55
1853	....	18,626 28	....	....	19,394 21	12,665 24	23,883 28	2,214 84	673 15	49,830 72
1854	....	18,963 53	....	....	10,394 21	3,047 11	33,099 05	2,187 62	265 10	48,993 09
1855	....	5,660 85	....	....	10,394 21	6,971 63	23,094 86	2,252 97	84 93	42,798 60
1856	....	3,424 12	....	....	10,394 21	3,223 28	4,052 49	2,404 11	12,000 48	32,673 57

1857........	....	91,170 43	....	....	10,394 21	29,988 16	66,101 23	2,435 05	9,756 70	118,675 35
1858........	....	179,310 77	....	....	10,394 21	28,345 22	161,703 33	2,604 82	6 35	203,052 93
1859........	....	47,198 37	....	....	10,394 21	39,026 44	18,786 02	2,195 01	4,665 83	75,067 51
1860........	....	67,239 14	53,478 11	....	9,592 04	69,787 13	816 67	3,264 81	12,485 77	148,924 53
1861........	....	33,436 14	132,974 23	....	2,058 88	20,828 36	6,510 67	2,628 39	18,788 48	183,789 01
1862........	....	90,100 53	7,000 00	....	233 33	81,911 76	7,628 96	2,294 62	20,626 58	119,695 24
Total...	$241,144 59	$948,214 17	$663,600 58	$20,000 00	$571,349 91	$1,052,343 51	$756,198 18	$51,398 26	$86,492 59	$3,201,383 03

* 9 months.

(No. 74.)

STATEMENT

Of Receipts and Payments on account of the Crooked Lake Canal, in each year, up to September 30, 1862, inclusive, viz :

YEAR.	Loans.	Premiums on loans.	RECEIVED.					DEFICIENCIES.	
			Avails of loans.	From Sinking Fund.	Tolls.	Miscellaneous.	Total.	Paid by the General Fund.	Paid by the Erie and Champlain canals.
1831*	$100,000 00		$100,000 00				$100,000 00		
1832									
1833	20,000 00	$20,402 26	40,402 26			$5,997 24	46,399 50		
1834					$1,007 60		1,007 60	$12,829 82	
1835					1,803 76		1,803 76	8,243 35	
1836					1,953 90		1,953 90	9,794 28	
1837					1,547 61		1,547 61	11,323 54	
1838					1,566 06		1,566 06	10,037 55	
1839					1,893 90		1,893 90	7,769 52	
1840					1,613 16		1,613 60	9,819 72	
1841					2,023 46		2,023 46		$14,429 46
1842					1,216 73		1,216 73		13,718 06
1843					1,341 60		1,341 60		9,213 34
1844					1,367 21		1,367 21		9,380 69
1845					1,662 84		1,662,84		10,048 11
1846					1,846 37		1,846 37		36,771 78
1847				$6,000 00	1,774 55		7,774 55		51,797 10
1848				6,000 00	1,858 04		7,858 04		65,076 49
1849				6,000 00	1,819 17	75 00	7,894 17		11,341 26
1850				125,000 01	1,796 17	870 00	127,666 18		13,225 84
1851					1,714 34	15 00	1,729 34		11,773 68
1852					1,246 02	1,750 92	2,996 94		7,654 52

1853*					1,656 75	4,700 00	6,356 75		4,651 75
1854					1,303 69		1,303 69		4,740 43
1855					837 48		837 48		5,371 36
1856					1,154 48		1,154 48		4,447 78
1857					879 26		879 26		11,812 65
1858					520 82		520 82		10,409 09
1859					715 06		715 06		4,935 49
1860					683 34		683 34		5,616 78
1861					699 94		699 94		6,384 27
1862					712 70		712 70		7,369 21
Total	$120,000 00	$20,402 26	$140,402 26	$143,000 01	$40,216 01	$13,408 16	$337,026 44	$69,817 78	$320,169 14
Deficiencies paid by the General Fund and the Erie and Champlain canals							389,986 92		
							$727,013 36		

* 9 months.

No. 74.—Continued.

YEAR.	PAID.						
	Principal of loan.	Interest on loans.	Canal Commissioners.	Superintendents of repairs.	Collectors.	Miscellaneous.	Total.
1831*		$1,537 67	$11,350 00				$12,887 67
1832		5,000 00	62,906 46				67,906 46
1833		5,250 00	52,461 30				57,711 30
1834		6,000 00	13,293 82	$2,437 67			21,731 49
1835		6,000 00	1 70	3,694 66	$350 75		10,047 11
1836		6,000 00	255 90	5,063 82	425 25	$3 21	11,748 18
1837		6,000 00	402 31	5,743 71	725 13		12,871 15
1838		6,000 00		5,060 07	543 54		11,603 61
1839		6,000 00		2,778 31	885 11		9,663 42
1840		6,000 00		4,559 23	873 65		11,432 88
1841		6,000 00	2 00	9,463 07	987 85		16,452 92
1842		6,000 00		8,016 66	918 13		14,934 79
1843		6,000 00		3,674 16	880 78		10,554 94
1844		6,000 00		3,905 84	842 06		10,747 90
1845		6,000 00	9 00	4,844 67	857 28		11,710 95
1846		6,000 00	26,358 42	5,384 00	875 73		38,618 15
1847		6,000 00	46,630 76	6,065 89	875 00		59,571 65
1848		6,000 00	57,493 78	8,558 88	881 87		72,934 53
1849		6,000 00	2,163 61	10,208 40	863 42		19,235 43
1850	$120,000 00	5,000 01	10,131 25	4,983 72	777 04		140,892 02
1851			6,429 28	6,118 94	954 80		13,503 02
1852			1,750 92	7,975 12	925 42		10,651 46
1853				5,350 00	958 50		6,308 50
1854			1,719 65	5,122 08	922 04		7,763 77
1855			2,565 20	5,320 39	888 45		8,774 04
1856			780 00	694 16	888 02	3,240 08	5,602 26

1858	....	....	584 20	....	542 25	9,803 46	10,929 91
1859	....	....	147 78	....	440 09	5,062 68	5,650 55
1860	....	....	467 24	125 00	670 34	5,037 54	6,300 12
1861	....	....	573 10	....	493 98	6,017 13	7,084 21
1862	....	....	284 90	2,468 94	635 69	4,692 38	8,081 91
Total	$120,000 00	$112,787 68	$306,103 28	$127,817 37	$21,586 03	$38,303 85	$726,598 21
Balance on hand 30th September, 1862							415 15
							$727,013 36

* 9 months.

(No. 75.)

STATEMENT

Of Receipts and Payments on account of the Chenango Canal, in each year, up to September 30, 1862, inclusive, viz:

YEAR.	Loans.	Premiums on loans.	Discount on loans.	RECEIVED.					
				Avails of loans.	Erie and Champlain tolls to redeem stock.	From Sinking Fund.	Tolls.	Miscellaneous.	Total.
1833	$50,000 00	$7,755 00		$57,755 00					$57,755 00
1834	950,000 00	66,255 00		1,016,255 00				$3,438 69	1,019,693 69
1835								49,229 42	49,229 42
1836	650,000 00	13,000 00		663,000 00				3,075 33	666,075 33
1837	620,000 00	5,979 67		625,979 67			$4,081 62	90 23	630,151 52
1838	92,535 66			92,535 66			16,751 12	125 00	109,411 78
1839	20,000 00	500 00		20,500 00			18,050 33		38,550 33
1840	20,000 00		$975 00	19,025 00			14,023 32	114 00	33,162 32
1841							16,893 02		16,893 02
1842	6,102 34			6,102 34			15,330 57		21,432 91
1843	8,362 00			8,362 00			14,668 94		23,030 94
1844	3,000 00			3,000 00			20,983 05		23,983 05
1845							23,920 66		23,920 66
1846					$2,362,535 66		25,578 76		2,388,114 42
1847						$3,278 88	25,620 01		28,898 89
1848						3,278 88	28,091 66	6,591 56	37,962 10
1849						9,274 43	28,028 98	3,527 45	40,830 86
1850						2,851 72	20,343 65	7,801 91	30,997 28
1851						2,351 72	19,732 35	973 55	23,057 62
1852						21,651 72	16,891 62	30 24	38,573 58
1853						1,651 72	18,107 89		19,759 61
1854						20,901 72	19,496 15		40,397 87
1855						651 72	20,302 08	3,097 35	24,051 15
1856						651 72	18,634 62	204 66	19,491 00

1857........	....	....	....	....	....	651 72	22,969 47	....	23,621 19
1858........	....	....	....	....	....	651 72	15,305 64	127 43	16,084 79
1859........	....	....	....	....	....	651 72	17,801 72	1,799 02	20,252 46
1860........	....	....	....	....	....	8,888 29	22,214 37	11,472 00	42,574 66
1861........	....	....	....	....	....	150 00	23,397 24	41,46	23,588 70
1862........	....	....	....	....	....	3,100 00	22,155 94	....	25,255 94
Total........	$2,420,000 00	$93,489 67	$975 00	$2,512,514 67	$2,362,535 66	$80,637 68	$509,374 78	$91,739 30	$5,556,802 09
Deficiencies paid by the General Fund and the Erie and Champlain canals........									1,360,638 70
									$6,917,440 79

No. 75.—Continued.

YEAR.	DEFICIENCIES.		PAID.							
	Paid by the General Fund.	Paid by the Erie and Champlain canals.	Principal of loans.	Interest on loans.	Surplus toll to Erie and Champlain canals.	Canal Commissioners.	Superintendents of repairs.	Expenses of collectors and inspectors.	Miscellaneous.	Total
1833	....	....	....	$1,042 81	....	$9,222 65	....	....	$57 33	$10,322 79
1834	....	....	....	25,619 86	....	211,013 44	....	....	....	236,633 30
1835	....	....	....	50,000 00	....	651 782 45	....	....	67 36	701,849 81
1836	....	....	....	65,637 81	....	911,035 10	....	....	228 90	976,901 81
1837	$102,749 16	....	....	88,227 39	....	480,807 02	$18,663 62	....	315 81	588,013 84
1838	136,042 97	....	....	133,445 66	....	65,759 17	20,270 95	$1,074 85	35 48	220,586 11
1839	118,994 25	....	....	118,426 80	....	47,458 98¼	16,990 64	1,576 00	803 60	185,256 02¼
1840	121,774 37	....	....	119,576 79	....	12,232 90	14,775 24	1,559 66	4,417 36¼	152,561 95¼
1841	....	$122,003 21	....	120,326 76	....	5,349 47	16,638 05	1,931 42	563 88	144,809 58
1842	....	125,408 50	....	120,450 79	....	5,075 33	18,467 28	1,821 00	6,291 85	152,106 25
1843	....	123,618 04	....	120,974 23	....	668 05	15,917 35	1,395 40	2,624 08	141,579 11
1844	....	117,246 44	....	121,295 96	....	3,942 72	15,700 51	1,233 02	1,346 59	143,518 80
1845	....	116,936 47	....	121,374 89	....	153 95	18,283 33	1,198 91	....	141,011 08
1846	....	26,799 40	$2,336,310 66	33,219 03	....	152 47	17,827 13	1,332 00	730 98	2,389,572 27
1847	....	....	22,195 00	3,278 88	$3,983 97	2,704 28	18,404 54	1,226 00	842 77	52,635 44
1848	....	....	3,430 00	3,278 88	5,897 85	119 06	20,471 02	1,418 49	7,264 72	41,880 02
1849	....	1,261 35	6,702 34	3,172 09	....	817 88	27,772 21	1,442 12	2,785 57	42,692 21
1850	....	6,037 60	....	2,851 72	....	5,051 91	25,071 12	1,237 68	2,822 45	37,034 88
1851	....	12,975 92	....	2,351 72	....	1,064 75	31,110 32	1,426 08	80 67	36,033 54
1852	....	25,236 34	20,000 00	1,651 72	....	6,112 00	34,706 26	1,339 94	....	63,809 92
1853	....	21,143 62	....	1,651 72	....	....	37,752 37	1,400 79	98 35	40,903 23
1854	....	31,383 42	20,000 00	901 12	....	....	49,476 20	1,403 37	....	71,781 29
1855	....	25,502 96	....	651 72	....	3,095 35	44,250 04	1,557 00	....	49,554 11
1856	....	6,009 47	....	651 72	....	1,589 35	10,301 24	1,723 86	11,234 30	25,500 47
1857	....	7,196 60	....	651 72	....	160 00	2,276 18	1,923 39	25,806 50	30,817 79
1858	....	32,011 08	....	651 72	....	616 21	23.785 09	1,081 10	[illegible]	[illegible]

1859	....	10,077 39	....	651 22	....	1,033 72	3,450 10	1,883 66	22,910 56	30,329 86
1860	....	8,619 89	8,362 00	526 29	....	11,757 84	1,893 95	1,761 57	25,175 90	49,477 55
1861	....	40,046 00	....	150 00	....	89,097 72	1,210 98	1,744 35	21,431 65	63,634 70
1862	....	21,564 25	3,000 00	100 00	....	12,577 91	1,215 08	1,860 74	28,065 56	46,820 19
Total	$479,560 75	$881,077 95	$2,420,000 00	$1,262,792 12	$9,881 82	$2,491,351 68½	$506,681 79	$37,952 40	$187,003 97½	$6,915,723 79
Balance on hand 30th September, 1862										1,717 00
										$6,917,440 79

(No. 76.)

STATEMENT

Of Receipts and Payments on account of the Black River Canal, in each year, up to the 30th September, 1862, inclusive, viz:

YEAR.	Loans.	Premium on loans.	Discount on loans.	RECEIVED.							
				Avails of loans.	Temporary loans.	Interest on deposits.	From Sinking Fund.	From other funds.	Tolls.	Miscellaneous.	Total.
1837	$179,155 51	$14,079 66		$193,235 17		$11,825 65					$193,235 17
1838	412,290 59	7,550 53		419,841 12		5,980 94					431,666 77
1839						2,719 89		$46,462 96			52,443 90
1840	208,553 90			208,553 90	$150,000 00	2,487 21		243,634 70			604,908 49
1841	276,706 23		$26,706 23	250,000 00	200,000 00						452,487 21
1842	365,988 65			365,988 65	18,967 00						384,955 65
1843	50,305 12			50,305 12							50,305 12
1844	13,000 00			13,000 00							13,000 00
1845	38,000 00			38,000 00							38,000 00
1846	20,000 00			20,000 00							20,000 00
1847							$86,122 84	100,000 00			186,122 84
1848							86,122 84	149,563 83			235,686 67
1849							435,881 68	174,272 96			610,154 64
1850							61,203 63	100,618 44	$1,115 73	$2,093 09	165,030 89
1851							527,042 86	76,359 30	3,834 73	672 36	607,909 25
1852							334,964 06	119,194 41	4,166 05	64 23	458,388 75
1853							21,203 63	93,353 79	5,546 32		120,103 74
1854							21,203 63	56,686 72	5,843 42		82,733 77
1855						3,000 00	21,283 06	51,349 24	6,808 05	100 00	82,540 35
1856						2,000 00	21,203 63	54,837 44	5,594 10	5,668 14	89,303 31
1847							21,388 29	50,000 00	6,575 22	18,584 97	96,548 48
1858							285,551 03	103,088 04	4,988 48	172 13	393,809 68

1859....	....	....	....	....	....	....	16,268 31	18,810 84	5,963 02	....	41,042 17
1860....	....	....	....	....	....	....	66,768 85	100,325 28	6,330 71	....	173,424 84
1861....	....	....	....	....	....	....	3,750 00	72,389 31	6,112 73	3,477 65	85,729 69
1862....	....	....	....	....	....	....	53,900 00	41,147 54	8,647 82	244 86	103,940 22
Total.	$1,564,000 00	$21,630 19	$26,706 23	$1,558,923 96	$368,967 00	$28,013 69	$2,063,858 34	$1,651,094 80	$71,536 38	$31,077 43	$5,773,471 60
Deficiencies paid by the General Fund and the Erie and Champlain canals..........											762,638 52
											$6,536,110 12

No. 76.—Continued.

YEAR.	DEFICIENCIES.		PAID.							
	Paid by the General Fund.	Paid by Erie and Champlain canals.	Principal of the loans.	Temporary loans.	Interest on the loans.	Canal Commissioners.	Superintendents.	Collectors.	Miscellaneous.	Total.
1837					$2,239 44	$5,255 55				$7,494 99
1838					29,263 97	97,735 21			$125 00	127,124 18
1839					29,572 28	513,154 39				542,726 67
1840	$58,711 89				39,792 87	537,794 74			110 39	577,698 00
1841		$50,681 18		$156,000 00	53,168 39	335,973 06			32 88	539,174 33
1842		74,186 24		200,000 00	74,186 24	234,824 34			47 75	509,058 33
1843		81,641 08			81,641 08	24,928 61				106,569 69
1844		83,171 09		18,967 00	83,171 09	14,528 33			480 75	117,147 17
1845		84,400 46			84,400 46	39,147 14			672 95	124,220 55
1846		85,240 30			85,240 30	12,852 14			820 12	98,912 56
1847					86,122 84	12,326 24			545 66	98,994 74
1848					86,122 84	108,522 95			9,262 37	203,908 16
1849			$355,988 65		79,893 03	233,373 97			112 25	669,367 90
1850		8,898 79			61,203 63	151,492 03	$10,014 52		216 16	222,926 34
1851		22,236 53	486,514 85		40,528 01	59,590 17	25,753 83	$317 43	1,046 26	649,750 55
1852		25,704 22	313,485 15		21,478 91	118,356 30	29,404 55	529 95	838 11	484,092 97
1853		19,423 53			21,203 63	31,057 28	24,443 88	525 97	395 44	78,526 20
1854		31,608 39			21,203 63	33,826 36	30,500 35	554 15	329 20	85,613 69
1855		29,616 30			21,203 63	105,539 77	35,671 38	752 97	364 20	163,531 95
1856		12,191 33			21,203 63	93,437 29	10,855 81	764 34	13,587 81	139,848 88
1857		8,423 15			21,203 63	61,664 72	1,613 45	788 67	19,706 16	104,971 63
1858		14,123 15	267,806 23		17,744 80	41,297 38	3,062 48	824 40	35,510 74	360,246 03

1859.............	....	21,607 03	8,900 00	....	7,368 31	16,023 62	1,843 98	627 86	28,010 29	62,774 06
1860.............	....	18,646 54	60,305 12	....	6,463 73	101,030 62	366 66	862 67	21,929 80	190,958 60
1861.............	....	17,192 05	....	....	8,750 00	103,593 31	6,173 28	667 13	17,264 93	131,448 65
1862.............	....	14,935 27	51,000 00	....	2,900 00	33,870 86	2,183 53	640 85	21,528 04	112,123 28
Total.......	$58,711 89	$693,926 63	$1,544,000 00	$368,967 00	$1,082,270 37	$3,157,296 38	$181,887 70	$7,851 39	$172,937 26	$6,515,210 10
Balance on hand September 30, 1862..........										20,900 02
										$6,536,110 12

(No. 77.)

STATEMENT

Of Receipts and Payments on account of the Genesee Valley Canal, in each year, up to the 30th September, 1862, *inclusive, viz:*

YEAR.	Loans.	Premium on loans.	Discount on loans	RECEIVED.							
				Avails of loans.	Temporary loans.	From Sinking Fund.	From other funds.	Tolls.	Interest on deposits.	Miscellaneous.	Total.
1837	$11,764 71	$1,315 29	....	$13,080 00	....	....	....	....	....	....	$13,080 00
1838	1,988,235 29	791 26	....	1,989,026 55	....	....	....	....	$90,120 52	....	2,079,147 07
1839	....	....	....	....	....	....	....	....	64,580 14	....	64,580 14
1840	250,000 00	....	$25,000 00	225,000 00	$100,000 00	....	....	....	25,926 30	....	350,926 30
1841	306,379 82	....	31,379 82	275,000 00	455,000 00	....	....	$12,275 44	4,092 70	....	746 368 14
1842	810,376 62	....	....	810,376 62	....	....	....	12,075 97	....	....	822,452 59
1843	186,243 56	10,000 00	....	196,243 56	....	....	....	13,734 52	....	....	209,978 08
1844	186,000 00	3,000 00	....	189,000 00	....	....	....	18,586 52	....	....	202,586 52
1845	55,000 00	....	....	55,000 00	....	....	....	20,484 17	....	....	75,484 17
1846	91,000 00	....	....	91,000 00	....	....	....	24,182 60	....	....	115,182 60
1847	....	....	....	....	....	$213,129 97	$128,000 00	25,055 20	....	....	366,185 17
1848	....	....	....	....	....	213,129 96	216,960 88	26,012 50	1,092 60	....	457,195 95
1849	....	....	....	....	....	999,500 00	177,575 34	25,234 04	637 35	....	1,202,946 73
1850	....	....	....	....	....	157,103 61	132,702 65	28,821 98	....	....	340,864 85
1851	....	....	....	....	....	157,103 61	139,246 62	25,451 36	....	$22,236 61	329,343 71
1852	....	....	....	....	....	157,103 61	209,077 29	25,064 39	....	7,542 12	391,245 29
1853	....	....	....	....	....	157,103 61	259,786 98	30,183 73	....	....	447,074 32
1854	....	....	....	....	....	158,726 27	66,425 10	30,662 08	....	....	255,813 45
1855	....	....	....	....	....	172,148 84	119,437 89	28,390 12	1,500 00	....	321,476 85
1856	....	....	....	....	....	157,295 61	90,986 41	23,365 84	2,000 00	3,568 16	277,216 02
1857	....	....	....	....	....	189,296 88	82,000 00	25,966 70	....		258,987 14
1858	....	....	....	....	....	693,199 08	110,955 64	25.651 07			

1859....	....	....	....	....	....	142,831 61	10,053 80	28,163 98	....	785 01	101,834 38
1860....	....	....	....	....	....	322,584 52	75,256 03	30,801 74	....	330 08	428,972 37
1861....	....	....	....	....	....	1,992,510 00	24,893 34	29,189 60	....	512 71	2,047,105 65
1862....	....	....	....	....	....	277,493 33	66,052 80	28,697 27	....	100 00	372,343 40
Total.	$3,885,000 00	$15,106 55	$56,379 82	$3,843,726 73	$555,000 00	$6,160,260 52	$1,859,410 77	$538,050 77	$189,949 61	$46,798 25	$13,193,196 65
Deficiencies paid by the General Fund and the Erie and Champlain canals..........											1,566,516 17
											$14,759,712 82

(No. 79.)

STATEMENT

Of Receipts and Payments on account of the Baldwinsville Canal, to 30th September, 1862, in each year.

YEAR.	RECEIVED.				PAID.				
	Tolls.	Miscellaneous.	Total.	Deficiencies paid by the Erie and Champlain canals.	Surplus tolls to the Erie and Champlain canals.	Superintendents.	Collectors.	Miscellaneous.	Total.
1853	$472 06	....	$472 06	....	$312 60	....	$159 46	....	$472 06
1854	429 86	....	429 86	$2,375 22	....	$2,372 29	432 79	....	2,805 08
1855	76 01	....	76 01	2,871 65	....	2,372 66	375 00	$200 00	2,947 66
1856	73 02	....	73 02	727 02	....	422 46	377 58	....	800 04
1857	32 81	....	32 81	1,486 34	....	455 43	178 59	885 13	1,519 15
1858	14 13	....	14 13	2,367 49	....	2,381 62	....	....	2,381 62
1859	26 03	....	26 03	387 27	....	413 30	....	....	413 30
1860	23 17	....	23 17	....	23 17	....	....	....	23 17
1861	22 57	....	22 57	1,047 03	....	1,069 60	....	....	1,069 60
1862	31 83	....	31 83	142 84	....	174 67	....	....	174 67
Total	$1,201 49	....	$1,201 49	$11,404 86	$335 77	$9,662 03	$1,523 42	$1,085 13	$12,606 35
Deficiencies paid by the Erie and Champlain canals			11,404 86						
			$12,606 35						

(No. 80.)

STATEMENT

Of Receipts and Payments on account of the Oneida River Improvement, in each year, up to Sept. 30, 1862, *inclusive, viz:*

YEAR.	Loans.	Discount on loans.	RECEIVED.					
			Avails of loans.	From Erie and Champlain canal tolls.	From Sinking Fund.	Tolls.	Miscellaneous.	Total.
1839	$25,000 00		$25,000 00					$25,000 00
1840								
1841	25,000 00	$2,250 00	22,750 00				$119 76	22,869 76
1842	9,432 57		9,432 57					9,432 57
1843	1,843 56		1,843 56					1,843 56
1844	8,000 00		8,000 00					8,000 00
1845								
1846								
1847				$20,000 00	$3,670 89	$118 22		23,789 11
1848					3,670 89	200 50	1,200 00	5,071 39
1849					12,938 39	230 71	1,200 00	14,369 10
1850					3,010 61	5,555 63		8,566 24
1851					3,010 61	18,409 56		21,420 17
1852					3,010 61	24,540 54		27,551 15
1853					3,010 61	31,275 36		34,285 97
1854					3,010 61	31,992 92		35,003 53
1855					3,010 61	24,004 94	1,443 75	28,459 30
1856					3,010 61	29,035 78		32,046 39
1857					3,010 61	15,758 42		18,769 03
1858					3,010 61	3,725 19		6,735 80
1859					3,010 61	2,044 64		5,055 25
1860					4,826 52	1,015 98		5,842 50
1861					51,025 00	919 63		51,944 63
1862					8,266 67	2,311 06		10,577 73
Total	$69,276 13	$2,250 00	$67,026 13	$20,000 00	$114,504 46	$191,139 08	$3,963 51	$396,633 18

Deficiencies paid by the Erie and Champlain canals, ... $34,176.62, making a total of........................... $430,809.80

No. 80.—Continued.

YEAR.	PAID.							
	Deficiencies paid by E. and C. canals.	Principal of loans.	Surplus tolls to E. and C. canals.	Interest on loans.	Canal Commissioners.	Superintendent of repairs.	Miscellaneous.	Total.
1839								
1840	$1,250 00			$1,250 00	$16,128 94		$33 53	$17,412 47
1841	2,245 83			2,365 50	21,690 05		21 92	24,077 56
1842	2,691 42			2,691 42	19,308 13			21,990 55
1843	3,204 29			3,204 29				3,204 29
1844	3,378 43			3,378 43	6,094 98			9,473 41
1845	3,588 94			3,588 94				3,588 94
1846	3,681 99			3,681 99				3,681 99
1847			$118 22	3,670 89	1,179 87			4,968 98
1848			200 50	3,670 89				3,871 39
1849		$9,432 57	230 71	3,505,82	6,080 00			19,249 10
1850			5,160 96	3,010 61	8,727 37	$394 67		17,293 61
1851			16,159 95	3,010 61	6,913 07	2,249 61		28,333 24
1852			22,775 17	3,010 61		1,765 37	535 81	28,086 96
1853			29,567 96	3,010 61		1,707 40		34,285 97
1854			28,945 55	3,010 61		2,876 47	170 90	35,003 53
1855			19,461 72	3,010 61	1,443 75	4,518 79	24 43	28,459 30
1856			26,554 05	3,010 61		2,481 73		32,046 39
1857			10,459 40	3,010 61	4,228 42	3,590 51	192 55	21,481 49
1858			927 92	3,010 61		2,797 27		6,735 80
1859			840 26	3,010 61		1,078 83	125 55	5,055 25
1860		1,843 56	797 06	2,982 96	182 67		36 25	5,842 50
1861	14,135 72	50,000 00		1,025 00	15,054 30		1 05	66,080 35
1862		8,000 00	935 30	266 67	928 00	447 76		10,577 73
Total	$34,176 62	$69,276 13	$163,134 73	$65,388 99	$107,959 55	$23,908 41	$1,141 99	$430,809 80

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,23,157 1
,77,792 9
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(No. 82.)

Names of the Clerks employed by the Auditor of the Canal Department, the sums paid to each, and the length of time each was employed, from the first of October, 1861, *to the 30th September,* 1862.

NAMES.	Annual salaries.	Time employed.	Paid for extra services.	Paid on salaries.
William McGourkey, acting auditor.	$1,600 00	12 months.	$65 09	$1,665 09
Henry C. Southwick, Jr. bookkeeper.	1,500 00	do	62 02	1,562 02
Edmund Savage	1,150 00	11 months.	35 31	1,089 47
Nathaniel S. Benton, Jr	1,100 00	12 do	49 74	1,149 74
John F. Smyth	1,050 00	do	48 20	1,098 20
Orrin A. Fuller	700 00	do	36 45	737 46
James H. Lockwood	650 00	8 2-5 m'hs.	48 01	503 47
David T. Nelligan	650 00	3 3-5 do	....	194 55
			$345 83	$8,000 00

(No. 83.)

STATEMENT

Showing the payments during the year ending September 30, 1862, *to the Canal Appraisers and their Clerks, for services,* **travel**, *postage, stationery, &c.*

NAMES.	Services.	Travel.	Miscellaneous.	Total.
Thomas B. Carroll	$2,000 00	$492 96	$69 08	$2,562 04
Ashbel B. Parmelee	2,000 00	410 64	50 93	2,461 57
William Wasson	2,000 00	500 00	144 17	2,644 17
Henry W. Reynolds, clerk	1,200 00	....	....	1,200 00
William R. Wasson, clerk	1,000 00	....	....	1,000 00
	$8,200 00	$1,403 60	$264 18	$9,867 78

The above payments were on account of the following canals, viz:

Erie canal enlargement	See No. 39,	$7,401 42
Erie canal	do 41,	2,200 00
Champlain canal	do 41,	53 56
Cayuga and Seneca canal	do 45,	151 14
Genesee Valley canal	do 55,	61 66
		$9,867 78

MISCELLANEOUS TABLES.

(No. 84.)

STATEMENT

Of the amount of tolls received on all the Canals, &c., the amount paid to the Collectors during the fiscal year ending 30th September, 1862, together with the net amount received in the fiscal years of 1861 and 1862.

	Tolls, 1862.	Collectors, 1862.	Net, 1862.	Net, 1861.
Erie canal	$4,431,400 61	$38,901 78	$4,392,498 83	$2,979,320 55
Champlain canal	101,517 94	3,786 17	97,731 77	102,294 01
Total E. and C. canals	$4,532,918 55	$42,687 95	$4,490,230 60	$3,081,614 56
Oswego canal	153,006 82	5,229 85	147,776 97	125,792 13
Cayuga and Seneca canal	21,395 82	1,734 80	19,661 02	16,471 06
Chemung canal	19,901 96	2,294 62	17,607 34	12,690 65
Crooked Lake canal	712 70	635 69	77 01	205 96
Chenango canal	22,155 94	1,860 74	20,295 20	21,652 89
Black River canal	8,647 82	640 85	8,006 97	5,445 60
Genesee Valley canal	28,697 27	2,609 70	26,087 57	26,206 67
Oneida Lake canal	121 83	329 15	....	....
Baldwinsville canal	31 83	....	31 83	22 57
Oneida river improvement	2,311 06	....	2,311 06	919 63
Seneca river towing path	374 55	....	374 55	190 38
Cayuga inlet	241 94	....	241 94	147 97
Total	$4,790,518 09	$58,023 35	$4,732,702 06	$3,291,360 07
Deduct expenses over receipts on Oneida Lake canal			207 32	536 65
			$4,732,494 74	$3,290,823 42

(No. 85.)

STATEMENT

Of the amounts advanced to the superintendents of repairs on the canals in each fiscal year, ending 30th September, 1862, 1861, 1860, 1859, 1858, 1857, 1856, 1855 *and* 1854, *including* $115,000 *expended in* 1854, *under chap.* 16, *Laws of* 1854, *and also the amounts paid to contractors for repairs during the fiscal years* 1855, 1856, 1857, 1858, 1859, 1860, 1861 *and* 1862.

Sections.	CANALS.	1862.	1861.	1860.	1859.	1858.	1857.	1856.	1855.	1854.
1	Erie canal	$10,310 23	$6,638 15	....	$43,672 20	$80 38	$3,471 18	$4,829 24	$59,840 65	$119,115 36
2	do	9,664 84	10,790 74	$32,400 74	24,810 93	29,402 75	18,999 18	24,751 90	64,104 51	44,805 10
3	do	11,471 14	7,958 17	3,542 26	34,122 70	26,453 35	24,499 43	48,726 91	68,431 26	71,334 63
4	do	6,123 57	7,209 06	1,779 19	26,852 66	33,037 67	37,052 63	43,883 49	45,679 51	48,050 87
5	do	4,527 83	2,880 32	....	128 51	11,599 25	29,416 49	40,124 57	30,307 93	28,509 07
6	do	....	....	11,031 44	22,101 22	17,220 81	14,419 07	26,403 08	27,686 01	45,254 02
7	do	1,501 71	688 41	Estimated 500 00	3,574 04	10,555 83	9,202 73	7,617 22	9,296 77	14,186 35
8	do	998 36	1,961 76	564 50	3,797 71	1,862 93	373 08	2,123 92	2,328 67	27,213 90
9	do	1,331 93	5,732 45	663 75	5,575 53	23,758 80	28,040 51	16,646 65	18,108 79	39,980 07
10	do	458 32	363 86	11,521 83	17,183 96	28,726 57	26,922 44	19,547 31	21,148 82	31,068 12
11	do	458 33	500 00	3,364 26	51,981 92	43,734 34	56,483 85	40,586 87	32,176 77	67,887 53
12	do	2,456 84	362 32	8 65	10,792 71	24,505 21	62,548 57	46,340 98	35,555 48	46,792 35
13	do	....	....	555 14	34,673 97	9,200 00	37,060 11	29,111 34	32,453 42	37,298 88
13 & 14	do	5,053 80	12,213 16	12,351 04	22,307 58	42,060 75	....	....	....	....
	do by resident engineers	....	....	3,440 68	....	....	....	....	....	....
	Total on the Erie canal	$54,356 90	$57,298 40	$81,723 48	$301,575 64	$302,198 64	$348,489 27	$352,693 48	$447,118 59	$621,496 25
1	Champlain canal	16,376 04	7,389 32	42,488 16	29,955 38	42,334 13	58,031 11	17,220 35	49,226 91	39,385 79
2	do	2,160 22	2,344 70	898 06	15,282 41	10,240 58	995 21	8,221 85	24,977 07	24,718 50
3	do	3,210 11	1,720 01	3,688 37	10,447 94	14,400 63	1,338 32	9,082 25	19,385 22	19,706 77
	Total on Erie and Champlain canals	$76,103 27	$68,752 43	$128,798 07	$357,261 37	$369,173 98	$408,853 91	$387,217 91	$540,707 79	$705,307 31
	Oswego canal	10,535 49	3,776 53	5,264 93	44,427 25	97,565 51	83,267 97	59,529 15	64,635 15	67,247 64
	Cayuga and Seneca canal	14,799 98	17,010 38	131 24	5,278 55	30,872 03	12,688 50	10,082 85	10,557 72	16,834 52
	Chemung canal	7,628 96	6,510 67	316 67	18,786 02	161,702 33	66,101 23	4,652 49	23,094 86	33,099 05

	Crooked Lake canal	2,468 94		125 00			199 98	694 16	5,320 39	5,122 08
	Chenango canal	1,215 93	1,210 98	1,893 95	3,450 19	23,785 09	2,276 18	10,301 24	44,260 04	49,476 20
	Black River canal	2,183 53	6,173 28	366 66	1,843 98	3,062 48	1,613 45	10,855 81	35,671 38	30,500 35
	Genesee Valley canal	16,261 06	1,707 64	12,261 70	33,372 43	49,136 90	41,032 14	22,192 85	51,417 00	44,759 69
	Oneida Lake canal	100 00	400 00					107 91	6,235 03	11,802 83
	Baldwinsville canal	174 67	1,069 00		413 30	2,881 62	455 43	422 46	2,372 66	2,372 29
	Oneida river improvement	447 76			1,078 83	2,797 27	3,590 51	2,481 73	4,518 79	2,876 47
	Total by superintendents	$131,919 64	$106,611 51	$149,158 22	$465,911 92	$740,477 21	$620,079 30	$508,538 56	$788,781 41	$969,398 43
1	Erie canal, by contractors	29,240 00	35,928 64	37,267 17	58,328 44	46,549 96	42,999 96	38,172 94	11,994 47	
2	do do	9,370 78	9,470 78	4,292 08	1,198 96					
3	do do	7,871 27	7,418 00	6,899 05	1,460 40					
4	do do	9,564 44	8,774 36	8,330 06	937 36					
5	do do	6,237 41	7,563 63	6,205 00	356 96					
7	do do	7,934 73	2,364 80	2 032 59	609 56					
8	do do	6,999 96	7,000 02	9,354 16	7,369 98	7,879 88	6,639 81	5,725 35	4,878 76	
9	do do	6,999 96	4,424 96	5,071 55	1,905 75					
10	do do	9,510 97	10,345 95	4,011 54						
11	do do	10,738 26	9,382 43	7,061 69						
12	do do	6,147 71	3,977 02	2,550 50	493 52					
13	do do	8,985 07	5,625 62	5,104 30	882 60					
14	do do	15,914 88	12,178 82	2,818 92						
1	Champlain canal, do	4,606 96	5,080 09	7,582 62	4,750 28			2,341 29		
2	do do	8,506 63	9,118 47	2,200 74	1,211 20	6,448 65	9,132 16	3,952 56		
3	do do	4,472 15	3,166 29	3,286 45	1,292 04	6,103 12	7,207 32	3,306 40		
	Oswego canal, do	19,186 96	23,192 76	14,456 55	5,741 08					
	Cayuga and Seneca canal	4,258 70	2,473 08	3,360 43	1,113 25					
	Chemung canal, by contractors	17,649 07	18,788 48	12,031 48	4,660 46		9,543 55	11,964 48		
	Crooked Lake canal, do	4,692 38	6,017 13	5,033 63	4,849 53	9,803 46	4,447 37	3,204 08		
	Chenango canal do	27,823 68	21,431 65	25,175 90	23,611 54	20,700 00	26,806 50	11,234 30		
	Black River canal, do	18,802 06	17,261 63	21,834 91	23,539 65	15,406 88	12,601 25	6,165 28		
	Genesee Valley canal, do	48,279 94	27,169 05	29,197 68	16,380 98	33,468 81	19,666 87	9,845 43		
	Oneida Lake canal, do	2,375 01	2,841 61	4,058 67	3,975 00	4,103 94	3,919 00	2,481 71		
	Total on all the canals	$428,088 62	$367,606 84	$378,285 89	$629,580 51	$890,941 91	$762,042 99	$606,932 38	$805,654 64	$969,398,43

(No. 86.)

STATEMENT

Of the operation of the Sinking Fund for the Canal Debt, article 7, § 1, of the Constitution.

YEAR.	RECEIVED.					
	Loans to supply deficiencies.	Proceeds of taxes.	From tolls.	Interest on deposits and investments.	Miscellaneous.	Total.
1846*			$433,333 33			$433,333 33
1847			1,300,000 00			1,300,000 00
1848	$825,000 00	$119,410 30	1,300,000 00	$1,899 71	$16,858 94	2,263,168 95
1849	1,739,024 76		1,300,000 00	7,774 28	760 00	3,047,559 04
1850			1,300,000 00		258,480 69	1,558,480 69
1851			1,300,000 00			1,300,000 00
1852			1,300,000 00	3,250 00		1,303,250 00
1853			1,300,000 00	23,335 79		1,323,335 79
1854		657,145 86	1,300,000 00	10,000 00		1,967,145 86
1855			1,300,000 00	28,000 00		1,328,000 00
1856	4,000,000 00		1,700,000 00	14,000 00		5,714,000 00
1857			1,589,015 60	32,995 09	32,136 69	1,654,147 38
1858	1,500,000 00	40,500 00	993,325 97	60,355 36	151,670 03	2,745,851 36
1859		47,000 00	962,000 67	18,705 32		1,027,705 99
1860			1,669,611 61	49,082 91	822,839 02	2,541,533 54
1861	1,200,000 00		1,700,000 00	14,650 48	16,883 50	2,931,533 98
1862			1,700,000 00	22,942 24		1,722,942 24
Total	$9,264,024 76	$864,056 16	$22,447,287 18	$286,991 18	$1,299,628 87	$34,161,988 15

* 4 months.

No. 86.—Continued.

YEAR.	PAID.					
	Principal of debt.	Interest on debt.	Claims prior to 1st June, 1846.	Certificates, plates and agency in New York.	Premiums, &c., on purchase of stocks & loaned on taxes.	Total.
1846	$433,338 33	....	....	....	....	$433,333 33
1847	205,256 00	$937,205 64	....	$2,116 00	$5,131 40	1,149,709 04
1848	1,341,489 00	911,736 05	....	2,452 00	3,838 46	2,259,515 51
1849	2,097,329 00	898,599 05	....	2,597 00	2,101 38	3,000,626 43
1850	482,786 64	861,211 00	$84,715 62	2,185 00	1,636 34	1,432,534 50
1851	573,609 91	822,435 38	34,829 53	2,257 50	177 05	1,433,309 37
1852	340,265 45	801,161 00	....	2,170 75	278 53	1,143,875 73
1853	....	801,161 00	....	2,087 50	621,467 47	1,424,715 97
1854	479,025 00	792,911 00	10,936 86	2,229 66	....	1,285,102 52
1855	1,111,911 00	750,669 07	25,177 03	2,411 05	....	1,890,168 15
1856	4,118,266 34	692,193 28	12,113 37	2,908 13	....	4,825,481 12
1857	102,285 00	692,193 28	32,377 93	2,391 63	73,205 95	902,453 79
1858	2,929,767 34	672,710 72	217 39	3,001 38	49,420 57	3,655,117 40
1859	152,170 00	614,263 04	180 00	2,358 00	604,156 28	1,373,127 32
1860	900,523 00	600,116 50	318 00	2,381 25	200,000 00	1,703,338 75
1861	2,175,551 23	538,675 36	....	2,412 00	156 31	2,716,794 90
1862	920,000 00	517,230 08	220 00	2,212 00	559,747 26	1,999,409 34
Total	$18,363,568 24	$11,904,471 45	$201,085 63	$38,170 85	$2,121,317 00	$32,628,613 17
Balance on hand September 30, 1862						1,533,374 98
						$34,161,988 15

(No. 87.)

STATEMENT

Showing, 1. *The amount of Tolls (including rents from surplus waters) collected in each fiscal year, from* 1826 *to* 1862. 2. *Total sum paid to collectors, inspectors, and weigh masters, and the expenses of their offices.* 3. *The percentage of the cost of collection on the gross amount of Tolls collected.* 4. *The year in which the collection of Tolls commenced, on each lateral canal.*

YEAR.	1. Tolls.	2. Cost of collection.	3. Per cent.	4. Name of canals.
1826	$844,508 02	....	....	Cayuga and Seneca.
1827	881,134 09	$27,086 61	$3 06	
1828	831,002 10	31,095 20	3 73	Oswego.
1829	817,919 28	32,171 04	3 91	
1830	1,045,163 42	29,368 91	2 77	
1831*	751,268 62	27,686 13	3 72	
1832	1,112,917 74	30,191 44	2 60	
1833	1,388,380 53	32,477 33	2 30	
1834	1,387,715 02	33,327 39	2 37	Chemung and Crooked Lake.
1835	1,484,595 61	35,391 37	2 35	
1836	1,598,455 48	35,275 62	2 19	
1837	1,325,609 77	41,476 69	3 09	Chenango.
1838	1,465,275 16	36,466 94	2 45	
1839	1,655,788 56	53,329 85	3 20	
1840	1,606,827 28	53,691 33	3 36	
1841	1,989,686 71	53,247 08	2 66	Genesee Valley and Oneida Lake.
1842	1,797,463 80	52,362 67	2 89	
1843	1,953,829 08	47,065 05	2 40	
1844	2,388,457 34	46,260 05	1 92	
1845	2,375,533 43	47,423 69	1 98	
1846	2,798,849 76	49,312 14	1 75	
1847	3,463,710 26	50,759 55	1 47	
1848	3,156,968 38	57,768 31	1 83	

1849	3,378,920 18	56,706 62	1 68	
1850	3,393,081 37	54,986 50	1 62	Black River.
1851	3,703,999 34	75,358 45	2 03	
1852	3,174,857 49	69,544 31	2 19	
1853	3,162,190 14	70,460 42	2 22	Baldwinsville.
1854	2,982,114 97	75,542 93	2 53	
1855	2,632,906 11	79,846 49	3 03	
1856	2,721,740 63	82,623 88	3 04	
1857	2,531,804 38	83,046 94	3 28	
1858	2,047,391 01	88,376 06	4 31	
1859	1,814,362 47	69,582 93	3 84	
1860	2,381,301 28	†96,889 04	4 07	
1861	3,358,033 97	70,456 85	2 10	
1862	4,797,283 09	66,454 20	1 39	

(No. 88.)

STATEMENT

Showing 1. *The tolls (including rents from surplus waters) received in each fiscal year, from* 1826 *to* 1862. 2. *The cost of repairs and collection of tolls.* 3. *The percentage which the cost of the maintenance of all the canals bears to the gross amount of tolls.* 4. *The aggregate tonnage of the total movement on all the canals, from* 1836, *when an account of tonnage was commenced, to* 1862.

YEAR.	1. Tolls collected.	2. Expenses of collection and repairs.	3. Per cent. of cost of maintenance on tolls.	4. Tonnage of all canals.
1826	$844,508 02	$531,675 73	$62 95	....
1827	881,134 99	494,701 05	56 18	....
1828	831,002 10	393,517 99	47 41	....
1829	817,919 28	357,587 52	43 76	....
1830	1,045,163 42	292,673 76	28 03	....
1831*	751,268 62	224,419 83	29 82	....
1832	1,112,917 74	428,964 78	38 54	....
1833	1,388,380 53	487,797 32	35 15	....
1834	1,387,715 02	534,897 82	38 54	....
1835	1,484,595 61	510,524 76	34 41	....
1836	1,598,455 48	467,599 33	29 22	$1,310,807
1837	1,325,609 77	608,993 60	45 88	1,171,296
1838	1,465,275 16	622,027 29	42 42	1,333,011
1839	1,655,788 56	504,757 53	30 45	1,435,713
1840	1,606,827 28	575,020 58	35 80	1,416,046
1841	1,989,686 71	514,517 55	25 84	1,521,661
1842	1,797,463 80	642,584 30	35 72	1,236,931
1843	1,953,829 08	531,145 56	27 18	1,513,439
1844	2,388,457 34	636,857 72	26 63	1,816,586
1845	2,375,533 43	738,106 32	31 07	1,977,565
1846	2,798,849 76	639,353 01	22 83	2,268,662
1847	3,463,710 26	643,766 08	18 53	2,869,810
1848	3,156,968 38	855,850 64	27 11	2,796,230
1849	3,378,920 18	685,803 91	20 30	2,894,732
1850	3,393,081 87	835,965 81	24 64	3,076,617
1851	3,703,999 34	907,730 20	24 50	3,582,733
1852	3,174,857 49	1,049,045 92	33 04	3,863,441
1853	3,162,190 14	1,098,476 92	34 73	4,247,853
1854	2,982,114 97	1,237,866 20	41 51	4,165,862
1855	2,632,906 11	989,792 12	37 59	4,022,617
1856	2,721,740 63	786,633 40	28 90	4,116,082
1857	2,531,804 38	970,453 46	38 33	3,344,061
1858	2,047,391 01	1,078,878 91	52 69	3,665,192
1859	1,814,362 47	897,878 96	49 49	3,781,684
1860	2,381,301 28	746,976 78	31 33	4,650,214
1861	3,358,033 97	706,786 14	21 05	4,507,635
1862	4,797,283 09	773,398 32	16 12	....

The tonnage returns for 1862 are not all in, but may be seen in the report of "Tolls, Trade and Tonnage," yet to be made by the Auditor.

* Nine months.

(No. 89.)

STATEMENT

Showing the receipts of tolls and miscellaneous expenses of collection and repairs, and surplus revenues, from 1836 *to* 1862, *in each fiscal year.*

YEAR.	Tolls and miscellaneous receipts.	Expenses of collection and repairs.	Surplus revenues in each year.
1836	$1,598,455 48	$467,599 33	$1,130,856 15
1837	1,325,609 77	608,993 60	716,616 17
1838	1,465,275 16	622,027 29	843,247 87
1839	1,655,788 56	504,757 53	1,151,031 03
1840	1,606,827 28	575,020 58	1,031,806 70
1841	1,989,686 71	514,517 55	1,475,169 16
1842	1,797,463 80	642,584 30	1,154,879 50
1843	1,953,829 08	531,145 56	1,422,683 52
1844	2,388,457 34	636,857 72	1,751,599 62
1845	2,375,533 43	738,106 32	1,637,427 11
1846	2,798,849 76	639,353 01	2,159,496 75
1847	3,463,710 26	643,766 08	2,819,944 18
1848	3,156,968 38	855,850 64	2,301,117 74
1849	3,378,920 18	685,803 91	2,693,116 27
1850	3,393,081 37	835,965 81	2,557,115 56
1851	3,703,999 34	907,730 20	2,796,269 14
1852	3,174,857 49	1,049,045 92	2,125,811 57
1853	3,162,190 14	1,098,476 92	2,063,713 22
1854	2,982,114 97	1,237,866 20	1,744,248 77
1855	2,632,906 11	989,792 12	1,643,113 99
1856	2,721,740 63	786,633 40	1,935,107 23
1857	2,531,804 38	970,453 46	1,561,350 92
1858	2,072,204 88	1,078,878 91	993,325 97
1859	1,859,879 63	897,878 96	962,000 67
1860	2,416,588 39	746,976 78	1,669,611 61
1861	3,402,628 30	706,786 14	2,695,842 16
1862	4,854,989 67	773,398 32	4,081,591 35
Total tolls	$69,864,360 49	$20,746,266 56	$49,118,093 93
Total expenses	20,746,266 56		
Total surplus revenues	$49,118,093 93		

(No. 90.)

STATEMENT

Showing the progress of the Canal Debt, the amount paid for interest, on loans and to the Canal Commissioners; also the Surplus Revenues in each fiscal year, from 1836 *to* 1862.

FISCAL YEAR.	PROGRESS OF THE CANAL DEBT.			PAID		Surplus revenues in each fiscal year.
	Borrowed.	Redeemed.	Canal debt at close of each fiscal year.	Interest on loans.	Canal Commissioners on all the canals.	
1836	$650,000 00	$651,249 46	$6,326,806 73	$328,744 86	$977,550 82	$1,130,856 15
1837	810,920 22	971,644 93	6,166,082 02	309,108 82	1,206,663 63	716,616 17
1838	3,493,061 54	351,023 15	9,308,120 41	446,798 88	1,640,070 19	843,247 87
1839	1,545,000 00	67,300 33	10,785,820 08	494,817 34	3,655,460 09	1,151,031 03
1840	3,478,553 90	137,726 22	14,126,647 76	658,921 58	5,005,515 75	1,031,806 70
1841	2,213,497 57	33,770 85	16,306,374 48	801,683 57	3,647,214 53	1,475,169 16
1842	3,411,618 00	143,600 03	19,574,392 45	1,006,497 81	2,599,116 81	1,154,879 50
1843	1,002,700 00	184,768 27	20,392,324 28	1,093,474 98	797,230 84	1,422,683 52
1844	655,000 00	333,418 60	20,713,905 58	1,116,726 53	712,449 53	1,751,599 62
1845	245,000 00	1,268,884 81	19,690,020 77	1,104,319 98	333,717 68	1,637,427 11
1846	300,000 00	2,961,780 64	17,028,240 13	976,552 48	182,367 30	2,159,496 75
1847	....	284,490 56	16,743,749 57	937,205 64	162,276 57	2,819,944 18
1848	1,314,819 34	1,344,919 00	16,713,649 91	911,736 05	864,767 36	2,301,117 74
1849	1,889,024 76	2,097,392 00	16,505,345 67	898,599 05	1,513,862 71	2,693,116 27
1850	192,595 49	482,786 64	16,215,144 52	868,873 74	2,132,370 93	2,557,115 56
1851	1,000,000 00	573,609 91	16,641,534 61	835,064 66	1,444,706 71	2,796,269 14
1852	700,000 00	340,265 45	17,001,269 16	843,795 62	1,381,254 63	2,125,811 57
1853	....	....	17,001,269 16	960,790 28	1,022,005 84	2,063,713 22
1854	2,250,000 00	479,025 00	18,772,244 16	926,231 51	1,156,024 74	1,744,248 77
1855	3,750,000 00	2,240,911 00	20,281,333 16	1,076,573 17	2,938,707 23	1,643,113 99
1856	6,750,000 00	4,489,266 34	22,542,066 82	1,194,306 62	4,011,241 22	1,935,107 23
1857	2,750,000 00	102,285 00	25,189,781 82	1,361,736 93	2,941,936 58	1,561,350 92
1858	2,200,000 00	2,929,767 34	24,460,014 48	1,406,120 80	1,942,658 43	993,325 97

1859		152,170 00	24,307,844 48	1,358,892 32	856,159 49	962,000 67
1860	3,900,000 00	1,100,523 00	27,107,321 48	1,472,745 78	3,264,976 23	1,669,611 61
1861	1,200,000 00	2,175,551 23	26,131,770 25	1,505,304 64	1,188,759 07	2,695,842 16
1862		2,120,000 00	24,011,770 25	1,429,859 36	1,264,078 61	4,081,591 35
Deduct the debt in 1835			6,328,056 19			
Increase of debt, 1836 to 1862			$17,683,714 06			
Paid interest, 1836 to 1862				$26,325,483 05		
Paid Canal Commissioners, 1836 to 1862					$48,843,151 82	
Amount of surplus revenues, 1836 to 1862						$49,118,093 93

(No. 91.)

STATEMENT

Showing the annual receipts, payments, remainders and deficiencies under art. 7 of the Constitution, commencing 1*st October*, 1846, *to* 30*th September*, 1862.

FISCAL YEAR.	Revenue, including interest on deposits.	CHARGES.			
		Cost of repairs and collection of tolls.	To pay interest and principal of debt, and for support of government.	Total charges.	Remainder for completion of canals.
1847	$3,473,484 60	$641,650 08	$1,850,000 00	$2,491,650 08	$981,834 52
1848	3,204,070 16	855,850 64	1,850,000 00	2,705,850 64	498,219 52
1849	3,442,906 62	685,803 91	1,850,000 00	2,535,803 91	907,102 71
1850	3,486,172 30	835,965 81	1,850,000 00	2,685,965 81	800,206 49
1851	3,722,163 11	907,730 20	1,850,000 00	2,757,730 20	964,432 91
1852	3,179,145 78	1,049,045 92	1,850,000 00	2,899,045 92	280,099 86
1853	3,168,546 51	1,098,476 92	1,850,000 00	2,948,476 92	220,069 59
1854	2,988,665 21	1,237,866 20	1,750,799 01	2,988,665 21	†194,062 71
1855	2,639,792 12	989,792 12	1,650,000 00	2,639,792 12	†763,121 32
1856	2,749,133 40	786,633 40	1,962,500 00	2,749,133 40	†1,103,718 60
1857	2,559,469 06	970,453 46	1,589,015 60	2,559,469 06	†1,730,300 27
1858	2,072,204 88	1,078,878 91	993,325 97	2,072,204 88	†2,372,916 67
1859	1,859,879 63	897,878 96	962,000 67	1,859,879 63	†2,404,241 97
1860	2,416,588 39	746,976 78	1,669,611 61	2,416,588 39	†1,696,631 03
1861	3,402,628 30	706,786 14	2,695,842 16	3,402,628 30	670,400 48
1862	4,854,989 67	773,398 32	3,396,242 66	4,169,640 98	685,348 69
Revenue	$49,219,839 74				
Cost of repairs and collection		$14,263,187 77			
To pay interest and principal of debt, &c			$29,619,337 68		
Total charges				$43,882,525 45	
Remainder, as above, for completion of the canals, during the years 1847 to 1853, and 1862				$5,337,314 29	
Deficiencies, as above, during the years 1854 to 1861				10,935,393 05	
Balance of "remainder" for completion during 16 years					....

† Deficiencies.

(No. 92.)

STATEMENT

Showing when the Canal Debt under article 7, section 1 of the Constitution, (amounting to $10,721,998.99 on 30th September, 1860,) will be paid by the Sinking Fund with the Contribution of $1,700,000 per annum.

	RECEIPTS.			PAYMENTS.				
	Contributions.	Interest on accumulations.	Total receipts.	Principal of debt.	Interest on debt.	Interest on temporary deficiencies.	Total payments.	Surplus 1st October each year.
1860	$1,700,000 00		$1,700,000 00					$735,854 34
1861	1,700,000 00	$21,250 00	1,721,250 00	$2,182,974 23	$175,675 36	$26,746 07	$2,685,395 66	1,118,802 26
1862	1,700,000 00	23,720 19	1,723,720 19	900,000 00	433,341 48	7,430 79	1,340,772 27	2,464,832 66
1863	1,700,000 00	49,371 88	1,749,371 88		403,341 48		403,341 48	3,480,437 03
1864	1,700,000 00	112,945 85	1,812,945 85	400,000 00	397,341 48		797,341 48	3,236,558 26
1865	1,700,000 00	148 402 10	1,848,402 10	1,739,024 76	353,256 11		2,092,280 87	4,821,246 45
1866	1,700,000 00	159,688 19	1,859,688 19		275,000 00		275,000 00	6,486,667 11
1867	1,700,000 00	240,420 66	1,940,420 66		275,000 00		275,000 00	
	$13,600,000 00	$755,798 87	$14,355,798 87	$5,221,998 99	$2,612,955 91	$34,176 86		

Total payments, debt, principal and interest, to 1st October, inclusive, 1867 .... $7,869,131 76
Surplus on 1st October, 1867, to redeem stock maturing thereafter 6,486,667 11

$14,355,798 87

Viz: 1st October, 1868 .... $1,500,000 00
1st January, 1874 .... 4,000,000 00

$5,500,000 00

(No. 93.)

STATEMENT

Showing the sums necessary to be invested annually at an interest of five per cent., to redeem the specified principal of loans in eighteen years.

Annual investments.	Will redeem in 18 years.
$8,463 39	$250,000 00
16,926 78	500,000 00
25,390 17	750,000 00
33,853 56	1,000,000 00
42,316 95	1,250,000 00
50,780 33	1,500,000 00
59,243 72	1,750,000 00
67,707 11	2,000,000 00
76,170 49	2,250,000 00
84,633 89	2,500,000 00
93,097 28	2,750,000 00
101,560 66	3,000,000 00
110,024 05	3,250,000 00
118,487 44	3,500,000 00
126,950 83	3,750,000 00
135,414 22	4,000,000 00
143,877 61	4,250,000 00
152,341 00	4,500,000 00
160,804 38	4,750,000 00
169,267 77	5,000,000 00

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ANNUAL REPORT

OF THE

COMPTROLLER

OF THE

STATE OF NEW YORK.

TRANSMITTED TO THE LEGISLATURE JANUARY 6, 1863.

ALBANY:
COMSTOCK & CASSIDY, PRINTERS.
1863.

State of New York.

No. 5.

IN ASSEMBLY,

January 6, 1863.

ANNUAL REPORT OF THE COMPTROLLER.

STATE OF NEW YORK:
COMPTROLLER'S OFFICE,
ALBANY, *January 6th*, 1863.

To the Speaker of the Assembly:

SIR—I have the honor herewith to transmit to the Legislature my Annual Report, exhibiting the condition of the finances of this State at the close of the last fiscal year.

I am, respectfully,
Your obedient servant,
LUCIUS ROBINSON,
Comptroller.

REPORT.

STATE OF NEW YORK:
COMPTROLLER'S OFFICE,
ALBANY, *January* 6, 1863.

To the Legislature:

In obedience to the statute, which requires the Comptroller to superintend and manage the fiscal concerns of the State; to exhibit the same to the Legislature; and to suggest plans for the improvement and management of the public revenues, I have the honor to submit the following

REPORT.

A war of unparalleled magnitude, which has called to the field more than two hundred thousand of our citizens, has, necessarily, required heavy expenditures. Aside from these, the financial affairs of the State are in a condition of unusual prosperity. They have been brought up from the deep depression which recently characterized them, to a point which may justly excite some degree of exultation.

Four years ago the annual report from this office commenced with the following discouraging but truthful statement:

"The financial condition of the State will not commend itself to those who regard with disfavor the creation of large debts, the accumulation of interest beyond current revenues, the increase of public expenditures, and the consequent imposition of heavy taxation. The unwelcome truth that the treasury is empty; that existing demands, pressed by clamorous creditors, cannot be discharged, whilst expenditures are steadily augmenting, furnishes melancholy evidence of a departure from the financial maxims which formerly distinguished the policy of the State."

This statement was not exaggerated. There had been improvident management, with wasteful and extravagant expenditures upon the public works; the experiment of reducing canal tolls, for the alleged purpose of increasing trade, had been carried to such an extent that the net proceeds were insufficient to pay one-half the interest upon the canal debt; the Legislature hesitated to levy taxes to supply the deficiency; interest was accumulating, the debt increasing, and the revenues diminishing.

In the following year a different policy was adopted. Necessity enforced economy; appropriations were made with more caution; expenditures for new enterprises were discouraged; a more rational and productive toll-sheet was established by the Canal Board, and such taxes as were necessary to sustain the faith and honor of the State were fearlessly laid by the Legislature. This policy has been steadily pursued until the present time, and the fruits of it are its best commendation. The enlargement of the canals has been completed; for the first time, in many years, they fully answer the requirements of the Constitution; all just demands have been promptly paid; the credit of the State was never so high; and, in the face of heavy war expenses, the funded debt has been reduced by the actual payment of $2,100,000.

But it should not be forgotten that the present prosperous condition of the finances can only be maintained by an inflexible adherence to the policy which has produced it. Full revenues will be likely to stimulate applications for new works and more lavish expenditures. It will be a fatal mistake if such applications are successful. There is no certainty that the present prosperity will continue; indeed, there is a moral certainty that it will not. Doubt and danger hang over the future. How or when the war will end, and what are to be its results, are beyond the reach of human foresight. The reopening of the Southern rivers and railroads may, to some extent, divert business from our canals. A short crop would be still more disastrous. A foreign war would suspend our export trade. An inflated and irredeemable paper currency portends commercial revulsion and derangement. The pecuniary sacrifices which are yet to be made in defence of our national life, may be, in the future as they have been in the past, beyond all our expectations. These circumstances appeal to the Legislature for a wise precaution, severe economy, and for a careful husbanding of our resources.

Before proceeding with the details of the several State funds, it will be most convenient to refer to the transactions connected with the Government of the United States and the war.

Accounts with the United States.

Upon the commencement of hostilities, in April, 1861, the Legislature passed an act appropriating $3,000,000, for the purpose of raising and equipping troops to be mustered into the service of the United States. The amount expended under that appropriation, up to the 31st day of July, 1862, was $2,912,706.25. Of this amount the sum of $79,215.25 was for ordnance, which was retained by the State for its own arsenals and not charged to the United States. For the purpose of carrying out the provisions of the act without delay, a temporary loan was made in anticipation of the tax, upon which interest was paid by the State to the extent of $131,188.02. Including this interest, the whole amount chargeable to the United States on the 31st day of July, 1862, was $2,948,963.66. From this is to be deducted the sum of $1,113,000, repaid by the United States in December, 1861, leaving a balance due to the State of $1,835,963.66.

By the act of Congress of 5th August, 1861, a direct tax of $20,000,000 was laid upon the United States, and each State was authorized to assume the payment of its proportion thereof, and to collect the same in its own way. If paid on or before the last day of June, 1862, a deduction of fifteen per cent. was to be made. It was also provided that the amount of direct tax apportioned to any State, should be liable to be paid and satisfied, in whole or in part, by the release of any liquidated and determined claim of such State, of equal amount against the United States, with the same abatement of the amount of the tax as would be allowed in case of payment of the same in money. The proportion of this tax for the State of New York was $2,603,918.67. The Legislature at its last session assumed the payment of that amount, and made the necessary appropriation therefor. It also authorized the Comptroller to apply towards the payment of it the indebtedness of the United States to this State, when the amount thereof should be ascertained, as provided in said act of Congress.

For the purpose of insuring an early settlement of the accounts, so that the amount due to the State might be applied to the payment of the tax before the end of June, all the accounts and vouchers were sent to the Treasury Department at Washington, in charge of an agent, in the month of February last. Much delay occurred, however, and they were not taken up for examination until near the end of May, nor until after I had visited Washington in person, to urge speedy action upon them. And when they were finally taken up, although the expenditures had been carefully made by a board of State officers and under the rigid scrutiny of the Governor and of General Patrick, late Inspector General, who had been long and honorably connected with the regular army, and although the accounts were certified to be correct both by him and by the Governor, yet the Third Auditor, to whom they were committed, deemed it his duty to disregard wholly these certificates and to treat the accounts and vouchers as if they had come from a paymaster in the army and had never been examined at all. It then became evident that the examination could not be completed before the end of June, nor could the time be foreseen when it would be completed.

Other States were subjected to the same difficulties and delays, and in order to save all from loss by reason of their accounts not being settled by the end of June, Congress passed an act extending the time for the presentation of the claims until the end of July, and for their settlement indefinitely. At the last mentioned date the account stood as follows:

Amount charged to the United States		$2,948,963 66
Deduct amount returned in December, 1861		1,113,000 00
Balance due to the State		$1,835,963 66
Proportion of direct tax due from the State		$2,603,918 67
Deduct 15 per cent.	$390,587 80	
do above balance	1,835,963 66	
		2,226,551 46
Balance due to the United States		$377,367 21

On the 24th day of June last there was paid to the United States, in cash, the sum of $400,000, for the purpose of discharging the balance due upon the tax. This leaves $22,632.79 in favor of the State, to cover any items which may be rejected upon the final settlement of the accounts. If more than that amount should be rejected, there will be a balance due to the United States; if less, there will remain a balance due to the State.

Further expenditures have been made since July last, which are chargeable to the United States, but which are not applicable to the payment of the tax. They will remain for future adjustment.

Under the act, chapter 25 of the Laws of 1862, "to provide for the more speedy payment of the volunteers from this State," there was advanced, in the month of March last, the sum of $56,400, the whole of which was subsequently returned to the treasury, 'from the Paymaster General's Department of the U. S. Army. No further advances were made under that act.

PUBLIC DEFENCE.

On the 17th day of April, 1861, an act was passed, being chapter 292 of the Laws of 1861, "to provide arms and equipments for the militia of the State and for the public defence." It appropriated the sum of $500,000 for this purpose. Under that act 10,000 Enfield rifles were purchased and placed in the Arsenal at Albany, at a cost, including all expenses, of $191,288.46. Upon application from the War Department, these rifles were all issued to volunteers from this State, mustered into the service of the United States since July last, and the amount of their cost, as above stated, has been directed to be refunded to the treasury of this State. The amount has not yet been received.

Under the same act, in December, 1861, when there was danger of immediate hostilities with Great Britain, there was purchased a large quantity of timber, at a cost of $79,228.96, for the purpose of placing defensive obstructions in the harbor of New York. After the danger had passed away the timber was directed to be sold, and is being disposed of at prices which it is believed will save the State from any loss on account of it. Several other payments were made for cannon, ammunition, and military stores now in the State arsenals, making the total expenditures under said act, at the close of the fiscal year, $297,652.85

BOUNTIES TO VOLUNTEERS.

On the second day of July last the President of the United States called for 300,000 volunteers, the quota of the State of New York being about 60,000 men. The Governor immediately issued his proclamation, urging enlistments. But the call had come unexpectedly, after recruiting had been suspended, and at the most difficult period of the year, just at the commencement of the harvest, when labor was scarce and wages were high. It soon became evident that the volunteers could not be obtained as quickly as they were required without offering large bounties. Requests came from all parts of the State for an extra session of the Legislature, to provide for the payment of such bounties. But to wait for an extra session would unavoidably cause delay, whilst the President was demanding the utmost possible dispatch in raising and forwarding the new forces. In this emergency the Commercial Bank of Albany offered to pay the bounties, provided the necessary funds should be placed in its possession, and take upon itself the risk of an appropriation being made for the purpose by the Legislature at its regular session.

An arrangement to this effect was at once completed. The bank was appointed one of the deposit banks for canal funds, and such funds were, from time to time, deposited with it, to the extent of $2,000,000, upon the same rate of interest as was paid by the other banks. For the residue of the amount required, Comptroller's bonds were issued in anticipation of the two mill tax levied for the purpose of paying the direct tax to the United States. An act of Congress having suspended the direct tax until 1865, after the two mill tax had been levied by the Legislature, the amount raised by the latter will be in the treasury unappropriated, and can be applied to the reimbursement of the canal fund, and the payment of the Comptroller's bonds.

It would have been amply sufficient for both purposes without any further tax whatever, but for the second call by the President for an additional 300,000 men, to be raised by draft, at a certain date, unless previously raised by enlistments. For the purpose of avoiding a draft, the bounties were continued under the second call after the quota of the State had been filled under the first. The proclamation of the Governor, offering a bounty of $50 for each volunteer, was issued July 17, and continued until September 6, from which date until September 30, bounties were paid to those only who enlisted into the old regiments. At the last mentioned date, they ceased altogether.

The whole amount advanced by the bank for bounties to soldiers enlisted, within the dates mentioned, was $3,500,000. The funds deposited with the bank to enable it to make these advances were $2,000,000; canal funds, as before stated, $1,500,000, proceeds of six per cent. Comptroller's bonds, payable the first of June and July next. The arrangement was made and has been carried out so as not to infringe any provision of the law or the Constitution. No money was drawn from the treasury on account of the bounties, and the expense and delay of an extra session were avoided. The action of the bank was most honorable and patriotic. It is presumed that the Legislature will promptly pass an act making the requisite appropriation to reimburse the amounts advanced, and ratify the action of the Governor.

The bounties were paid under the careful supervision of the Paymaster General of the State, and most of them were paid by him in person. The vouchers, which are very voluminous, have been deposited, and are being examined in this office. The amount paid out by him up to the 27th of December last was:

To recruits for old regiments	$713,650 00
To recruits for new regiments	2,724,825 00
Total	$3,438,475 00

There still remain some payments to be made to such volunteers as were entitled to receive the bounty, but were not present when their regiments were paid.

Completion of the Public Works.

The Legislature and the tax payers will hear, with pleasure, the announcement that the public works are finished. The enlargement of the canals was commenced in 1835. The cost of the work was then estimated at $12,000,000, and the time required for it, at twelve years. The actual cost has been about $40,000,000, and the time consumed has been twenty-seven years. On the first day of September last, in pursuance of an act of the Legislature, the canals were declared to be finished and the construction account closed. If the public mind was not filled with the distractions of war, this event would be celebrated by a general jubilee.

The grandeur and importance of these works cannot easily be overrated. Their value is attested by the vast amounts of produce and merchandise carried upon them, and the large revenues derived from them. But the cost of their construction has been immense, probably more than double the amount which it would have been if it had been left to individual enterprise. In 1817 it may have been necessay for the State to undertake the work, because at that time private capital and enterprise may not have been equal to it. But they have proved that they are now equal to any work that is worth the cost of construction. Will it not be wise, therefore, for the State henceforth to cease collecting taxes for such purposes, and leave canal and railroad building to those who can carry it on so much cheaper and better? Will not the State, in this way, save more than money? Will it not save itself from being despoiled by contractors and jobbers, from spendthrift habits, from combinations of local interests, from the corruptions and impositions which always gather around such enterprises, when the State engages in them? Will it not, also, by confining itself to the high and legitimate duties of government, save something of the dignity and public virtue, without which popular government can have no permanent existence?

CANAL REVENUES.

The following is a statement of the receipts and payments on account of the canal revenues:

Receipts during the fiscal year ending 30th Sept., 1862:		
From tolls collected on all the canals		$4,790,518 09
Rent of surplus waters		6,765 00
Interest on current canal revenues		39,363 49
Miscellaneous receipts		18,343 09
		$4,854,989 67
Payments during the year:		
To Canal Commissioners, for repairs	$236,318 16	
To contractors, for repairs	296,168 98	
To superintendents, for repairs	131,919 64	
To collectors, for salaries, clerk hire, pay of inspectors, and expenses of collectors' offices	58,023 35	
To weigh masters	8,430 85	
For salaries chargeable to annual revenues, refunding tolls, printing, and other miscellaneous payments	42,537 34	773,398 32
"Surpl revenuesus"		$4,081,591 35

Payment to Sinking Fund, under sec. 1, art. 7	$1,700,000 00	
Payment to Sinking Fund, under sec. 2, art. 7	350,000 00	
Transferred to the Sinking Fund, for the redemption of the canal debt under sec. 3, art. 7	1,146,242 66	
Transferred to the "fund" for support of government	200,000 00	
The "remainder" under sec. 3, art. 7	685,348 69	$4,081,591 35

It will be understood that the above distribution of the "surplus moneys," is for the current fiscal year, and not for the year during which they were received.

After providing fully for all the sinking funds required by the Constitution, it will be observed that there is a "remainder," amounting to $685,348.69. Out of this should be paid the amount of interest and contributions to the Sinking Fund of the loan of $2,500,000, made in 1859, to pay the floating canal debt which had been unlawfully incurred. As the Constitution requires a tax to be levied each year, to pay such interest and contribution, an amount equal to the tax should be appropriated from the above "remainder" to the General Fund, to the end that the tax for that fund may be so far diminished.

There will also be due on the first day of October next, the principal of a temporary loan of $200,000, made exclusively for the benefit of the canals, but which has been a charge upon the General Fund because the Constitution prohibited it from being a charge upon the Canal Fund. There is no propriety in keeping the General Fund burthened with this loan, or compelling it to pay it when there are canal moneys which may be applied to that object. This amount should be appropriated from the above "remainder," before all other claims. It is emphatically the "first lien" upon it.

There are other canal loans which are charges upon the General Fund and which should be provided for from the canal revenues, when they are sufficient for that purpose, after meeting the requirements of the Constitution.

CLAIMS OF THE GENERAL FUND.

A brief statement of facts will show where all canal "remainders" properly and justly belong. The General Fund once had a capital the annual income of which was sufficient for the support of the government without any taxation whatever. This capital became the subject of depredations from various sources until all that was valuable in it had been frittered away. The canals obtained the first and largest share. For several years they enjoyed the income of the auction and salt duties, and also of the public lands, when such incomes were very large.

The amount received for the canals from auction duties was	$3,592,039 05
The amount received for the canals from salt duties	2,055,458 06
The amount received for the canals from sales of land	320,518 15
The amount received for the canals from General Fund for deficiencies	1,386,498 88
The amount received for the canals from direct taxes, up to and including the current fiscal year	9,741,692 85
Total	$17,096,206 99
There has been paid from the canal revenues, on account of the General Fund debt, and for the support of government, altogether	8,922,018 73
Leaving a balance of	$8,174,188 26

Upon the above amounts a quarterly interest account should be stated, as the State pays its interest quarterly, and this would swell the amount to not less than $12,000,000, for which the canals are still in debt to the General Fund, that is, to the tax payers of the State. They have been promised from year to year that the surplus revenues of the canals would ultimately pay back these heavy taxes, and the promise should be performed; the faith of the State is pledged to the people in this respect.

Canal Tolls.

Ever since the construction of the canals was commenced it has been held as a cardinal principle that such tolls ought to be collected upon them as would repay the taxes levied on account of them, and also pay the interest and ultimately the principal of the Canal debt. This rule is clearly just, and should be steadily adhered to. The people of this State, at an immense cost to themselves, have opened a magnificent highway for the commerce of a continent. In doing this they have in one respect inflicted an injury upon themselves by bringing the produce of all the western States into competition with their own in the eastern markets. For this they ask no compensation, but only a repayment of the expense which they have incurred for this object. With the vast amount of business done upon the canals, the tolls necessary for this purpose need not be and they are not high. They are considerably lower than they were six years ago, although the enlargement has enabled as much freight to be carried in one boat now as was carried in two then. If shippers have anything to complain of it will be found in the charges of forwarders, and not in the tolls, which really produce little or no effect upon those charges.

THE STATE DEBT.

It is highly creditable to the State and its citizens that they have chosen to pay at once the large expenses which the war has brought upon them, and to submit to heavy taxation rather than increase the debt. Within the last year it has been actually reduced by the payment of $2,100,000 of principal. The entire debt is now as follows:

Canal debt	$24,011,770 25
General Fund debt	6,505,654 37
Total State debt	$30,517,424 62

The revenues of the canals have during the past year filled all the sinking funds, so that no taxation will be required for that purpose. If those funds are kept full hereafter, as they should be, the entire debt will be extinguished as fast as it becomes due, and will be substantially paid off within twelve years. This policy should be firmly pursued. In view of the condition of the national finances, those who hold a "public debt to be a public blessing" are likely to be blest to the full extent of their wishes without any addition from the State.

The details of the General Fund debt will be found in the statements hereto annexed. The following table contains the particulars of the Canal debt:

Statement of the canal debt, 30th September, 1862, showing each description of stock, the amount redeemable in each year, and the annual interest on the same.

When due.	7 per cent.	6 per cent.	5 per cent.	Total.
1837		$160 00		$160 00
1860			$27,000 00	27,000 00
1862			3,000 00	3,000 00
Pays no interest		$160 00	$30,000 00	$30,160 00
1863			$200,000 00	$200,000 00
1864	$1,200,000 00	$400,000 00		1,600,000 00
1865		1,789,024 76		1,789,024 76
1866		1,000,000 00	192,585 49	1,192,585 49
1868			1,500,000 00	1,500,000 00
1871			500,000 00	500,000 00
1872		3,050,000 00		3,050,000 00
1873		6,000,000 00		6,000,000 00
1874		2,250,000 00	4,500,000 00	6,750,000 00
1875		500,000 00		500,000 00
1877		900,000 00		900,000 00
Debt paying interest.	$1,200,000 00	$15,889,024 76	$6,892,685 49	$23,981,610 25
Debt not paying interest		160 00	30,000 00	30,160 00
Total debt	$1,200,000 00	$15,889,184 76	$6,922,585 49	$24,011,770 25
Annual interest	$84,000 00	$953,341 49	$344,629 27	$1,381,970 76

AN ANALYSIS OF THE FOREGOING TABLE.

Principal of debt, and sections of article 7 of the Constitution.			Annual interest of the debt.	
Section 1,	7's	$1,200,000 00	$84,000 00	
	6's	2,139,024 76	128,341 48	
	5's	5,500,000 00	275,000 00	
				$487,341 48
Section 3,	6's	11,000,000 00	$660,000 00	
	5's	1,000,000 00	50,000 00	
				710,000 00
Section 10,	6's	250,000 00	$15,000 00	
	5's	392,585 49	19,629 28	
				34,629 28
Section 12,	6's	2,500,000 00		150,000 00
		$23,981,610 25		$1,381,970 76

The State Funds.

It has been the uniform policy of the State to maintain specific funds for various purposes, and to keep separate accounts with each of such funds. Although this practice appears at first view as if tending to confusion, yet, upon close inspection, it will be found that the system of keeping the accounts has been so perfected, by the distinguished men who formerly filled this office, as to secure the utmost accuracy and simplicity.

The Canal Fund, being sacredly pledged to the redemption of the canal debt, has always been kept and administered separate and apart from the other State funds. All information in regard to it will be found in the full and able report of the Auditor of the Canal Department. It will only be referred to in a general way in this report.

The several funds particularly exhibited hereiu are as follows:

The General Fund,
The General Fund Debt Sinking Fund,
The Common School Fund,
The United States Deposit Fund,
The Literature Fund, and
Certain trust funds of small amount.

GENERAL FUND.—Revenue.

Balance in the treasury 30th September, 1861	$53,750 51	
Amount of receipts into the treasury during the year ending 30th Sept., 1862 (see statement A)	7,936,648 79	
Amount transferred from the School Fund for bonds for lands	1,170 00	
Amount of warrants drawn on the treasury remaining unpaid on the 30th Sept., 1862	625 88	
		$7,992,195 18
Amount of warrants drawn on the treasury on account of the General Fund, during the year ending 30th Sept., 1862 (see statement B)	$7,146,966 26	

Amount transferred to the following funds for interest on money in the treasury, during the year, belonging to said funds, viz:			
School Fund	$20,204 44		
Literature Fund	1,042 55		
U. S. Deposit Fund	1,521 30		
Tonawanda R. R. Co. Sinking Fund	333 62		
Long Island Sink. Fund	21 31		
Tioga Coal, &c., Sinking Fund	34 90		
		$23,158 12	
Amount of warrants drawn on the treasury remaining unpaid on the 30th September, 1861		458 69	
			$7,170,583 07
Balance in the treasury on the 30th Sept., 1862			$821,612 11

The above balance of $821,612.11 is rather apparent than real. It is caused by the payment into the treasury of the $1,500,000 advanced upon Comptroller's bonds, issued, as before stated, in anticipation of the two-mill tax, for the purpose of providing funds for the payment of bounties to volunteers. If this amount is deducted from the revenue, it leaves an actual deficiency of $678,387.89.

STATE OF THE TREASURY.

Balance in the treasury on the 30th September, 1861	$634,623 78	
Amount received into the treasury on account of the several funds, during the year ending 30th September, 1862 (see statement A)	11,803,274 54	
Amount of warrants drawn on the treasury remaining unpaid on the 30th September, 1862	625 88	
		$12,438,524 20
Amount of warrants drawn on the treasury on account of the several funds, during the year ending 30th September, 1862 (see statement B)	$11,082,333 49	

Amount of warrants drawn on the treasury remaining unpaid on the 30th September, 1861	$458 69	
		$11,082,792 18
Balance in the treasury on the 30th Sept., 1862		$1,355,732 02

STATEMENT OF BALANCES *due from and to the treasury on the 30th September*, 1862.

From the Treasurer, for balance in the treasury			$1,355,732 02
To the School Fund:			
Capital	$279,521 84		
Revenue	72,665 96		
		$352,187 80	
To the Literature Fund:			
Capital	$22,721 51		
Revenue	17,908 27		
		40,629 78	
To the U. S. Deposit Fund:			
Capital	$3,398 74		
Revenue	3,639 88		
		7,038 62	
To the Mariners' Fund:			
Capital	$164 81		
Under protest	1,169 76		
		1,334 57	
To the General Fund Debt Sinking Fund		104,960 38	
To the Tonawanda R. R. Co. Sinking Fund		21,881 78	
To the Long Island R. R. Co. Sinking Fund		2,021 31	
To the Tioga Coal, &c., Co. Sinking Fund		3,954 71	
To the Soldiers' Allotment Fund		110 96	
To the General Fund revenue		821,612 11	
			1,355,732 02

ESTIMATED REVENUE *applicable to the ordinary expenses of Government, including one mill tax for the canals and two mill U. S. tax, for the fiscal year commencing on the* 1*st October*, 1862.

Four mill State tax, viz: for support of Government, 1 mill; for canals, 1 mill; and for U. S. tax, 2 mills	$5,664,000 00
Balances due from county treasurers on account of the State tax levied in 1861	940,000 00
Auction duty	75,000 00
Salt duty	88,000 00

State prison earnings	$175,000 00
Arrears and interest on non-resident taxes	35,000 00
Fees of the public offices	2,000 00
Pedlers' licenses	2,000 00
Tolls, Cayuga Lake inlet	100 00
Interest on treasury deposits	15,000 00
Interest on Comptroller's bonds of the city of New York	18,000 00
U. S. Government, on account of advances from the treasury for arms supplied the volunteer militia	191,288 46
Appropriation per article 7, section 3, of the Constitution, from the surplus revenues of the canals, for the benefit of the General Fund	200,000 00
	$7,405,388 46
Add balance in the treasury 30th September, 1862	821,612 11
	$8,227,000 57

Estimated Expenses of Government *for the fiscal year commencing on the 1st October*, 1862.

Salaries of the officers of the Government, and the clerks of the public offices	$80,000 00
Salaries of the Judges of the Court of Appeals	13,000 00
Salaries of the Justices of the Supreme Court	108,000 00
Compensation of the members and officers of the Legislature	88,000 00
Contingent expenses of the Legislature	30,000 00
Expenses of the public offices	7,000 00
Stationery for the public offices	3,000 00
Expenses of the Capitol	12,000 00
Expenses of the State Hall	4,000 00
Expenses of the State Library	10,000 00
Expenses of the Hall for the State Cabinet of Natural History and the Agricultural Museum	4,500 00
Expenses of the Regents of the University and salary of the secretary	3,000 00
Incidental expenses of Government	750 00
Fuel for the Capitol, State Hall, and State Library	3,000 00
Postage of official letters	3,000 00
Printing for the State	100,000 00
Apprehension of criminals	500 00
Apprehension of fugitives from justice	$1,000 00
Agricultural societies	12,000 00
Salary of the Entomologist	1,000 00
Rent and taxes of the house occupied by the Governor	3,330 00

Costs of suit		$2,500 00
Indian affairs		1,000 00
Commissary's department		10,000 00
Compensation of the commissioners to examine the accounts of the Treasurer and of the Canal and Banking departments		1,500 00
Transportation of the journals and documents of the Legislature, reports, books, etc., and packages for the public offices, and expense of boxes		3,500 00
Compensation of constables for attendance upon the Court of Appeals		500 00
Advances to county treasurers for lands returned for unpaid taxes		20,000 00
Roads		4,000 00
Reports of the Court of Appeals and Supreme Court for exchange with other States		250 00
Expenses of the Onondaga Salt Springs		40,000 00
Expenses of the State prisons for support, etc.		275,000 00
Transportation of convicts		18,000 00
Inspectors of State prisons, for salaries and traveling expenses		6,000 00
Expenses of the Asylum for insane convicts		15,000 00
Natural History of New York, viz:		
James Hall, Palæontologist, salary,	$2,000 00	
" " for fossils and drawings	2,000 00	
		4,000 00
Expenses of the Pilot Commissioners of the port of New York		4,500 00
Expenses of public lands, including compensation of the Lieutenant Governor and the Speaker of the Assembly for services and mileage as Commissioners of the Land Office		4,000 00
New York Teacher for distribution to school officers and teachers		1,000 00
Interest on the Albany Basin loan		9,629 28
Interest on the $50,000 canal loan, per chap. 374, Laws of 1849		3,000 00
Interest on the $200,000 Oswego canal loan, per chap. 501, Laws of 1851		12,000 00
Interest on $200,000 temporary loan to complete the canals		10,000 00
Interest on $36,000 debt created for the benefit of the Stockbridge Indians		2,160 00
Interest on moneys in the treasury belonging to the specific funds		22,000 00
Redemption of Comptroller's bonds, due 1st June and 1st July, 1863, issued for temporary loans in anticipation of the State tax for public defense		1,500,000 00

Interest on temporary loan for public defense		$65,153 96
Expenses of the National Guard, per chap. 477, Laws of 1862		300,000 00
Balance of the appropriation for sick and wounded soldiers		22,662 02
Balance of the appropriation for the expenses of the volunteer militia		130,755 84
Balance of the appropriation for arms and equipments for the militia of this State, and for public defense, chap. 292 of the Laws of 1861		202,347 15
Montezuma Salt Springs		3,500 00
People's College at Havana		10,000 00
Balance of temporary loan due 1st July, 1862		10,000 00
For the payment from the General Fund of the loan made to the Susquehanna Seminary from the School Fund, chap. 434, Laws of 1862		12,000 00
Amount of one mill tax levied in 1862 and appropriated for canal purposes		1,434,810 91
Appropriation, per chap. 397, Laws of 1862, for the payment of claims incurred in the organization, equipments, and subsistence of the troops raised in this State for the service of the United States		500,000 00
Appropriation, per chap. 421, Laws of 1862, for the reimbursement of certain persons and regiments belonging to the militia of this State for clothing and equipments lost or destroyed in the service of the United States		50,000 00
For payment of bounties to volunteers		3,500,000 00
Amount appropriated to charitable institutions, viz:		
Deaf and Dumb, N. York, for supp't	$39,000 00	
" " for interest on debt	13,356 00	
Blind, New York, for support	30,000 00	
Juvenile Delinquents, New York	24,000 00	
House of Refuge, Western New York	25,000 00	
State Lunatic Asylum, for salaries	7,500 00	
Idiot Asylum	18,000 00	
Hospitals	26,000 00	
Orphan Asylums	41,000 00	
		223,856 00
Miscellaneous		50,000 00
		$8,971,705 16
Revenue		8,227,000 57
Estimated deficiency on the 30th Sept., 1863		$744,704 59

GENERAL FUND DEBT SINKING FUND.

Balance in the treasury on the 30th September, 1861	$251,000 02	
Amount received into the treasury during the year ending 30th September, 1862, (see statement A)	1,233,870 20	
		$1,484,870 22
Amount paid from the treasury during the year ending 30th September, 1862,(see statement B)		1,379,909 84
Balance in the treasury on the 30th September, 1862		$104,960 38

GENERAL FUND STATE DEBT.

The amount of the General Fund Debt is $6,505,654 37

(See table C, for the items of the debt.)

The principal of the debt is payable as follows:

State stock due prior to 30th September, 1862, the payment of which is provided for, but which had not been presented on that day, viz:

1861	$10,000 00
1862	30,000 00
	$40,000 00

On demand	$53,910 68
1864	287,700 00
1865	178,000 00
1866	385,000 00
1868	942,961 05
1870	700,000 00
1875	900,000 00
1878	800,000 00
At pleasure	2,258,082 64
	$6,505,654 37

CONTINGENT STATE DEBT.

The amount of unredeemed State stock issued and loaned to sundry railroad companies is $338,000 00

(See table C, for the items of this debt.)

SCHOOL FUND.

Capital.

This fund consists of the following items, viz:

State stock:		
5 per cent., issued on account of the Astor debt, redeemable at pleasure	$41,755 91	
5 per cent., issued on account of the deficiency in the General Fund Debt Sinking Fund, redeemable at pleasure	188,260 00	
6 per cent. issued on account of the deficiency in the General Fund Debt Sinking Fund, redeemable at pleasure	905,041 33	
		$1,135,057 24
Comptroller's bonds:		
6 per cent., redeemable in 1866	$320,300 00	
6 per cent., redeemable at pleasure	36,000 00	
		356,300 00
Bank stock:		
1,000 shares in the Manhattan Company		50,000 00
Bonds for lands		412,163 73
Bonds for loans		375,747 61
Mortgages for loans under the act of 1840, in charge of the Commissioners of the United States Deposit Fund		49,326 00
Money in the treasury		279,521 84
		$2,658,116 42

(See statement D, for increase and diminution of the fund.)

Revenue.

Balance of revenue in the treasury on the 30th September, 1861	$97,987 32	
Amount received into the treasury during the year ending 30th Sept., 1862, (see statement A.)	303,451 74	
Amount transferred from General Fund, for interest on money in the treasury during the year, per chap. 382, Laws of 1849	20,204 44	
		$421,643 50
Amount paid out of the treasury during the year ending 30th Sept., 1862, (see statement B.)		348,977 54
Balance in the treasury on the 30th Sept., 1862		$72,665 96

The revenue of this fund is estimated for the current year, viz:

Interest on State stock	$65,803 27
Interest on Comptroller's bonds	21,378 00
Interest on bonds for lands	21,000 00
Interest on bonds for loans	24,000 00
Interest on loan of 1840	2,900 00
Interest on money in the treasury	22,000 00
Dividends on bank stock	5,000 00
	$162,081 27
Amount appropriated from the income of the U. S. Dep. Fund	165,000 00
	$327,081 27

The payments for the current year are estimated as follows:

Appropriations for common school dividends, including the salaries of the common school commissioners:

From the income of the School Fund	$155,000 00	
From the income of the U. S. Dep. Fund	165,000 00	
		$320,000 00
For support of Indian schools		4,000 00
For teachers' institutes in the several counties		8,000 00
		$332,000 00

LITERATURE FUND.

Capital.

This fund consists of the following items, viz:

State stock:

6 per cent., issued for a loan under the act of May 13th, 1846, redeemable 1st July, 1864	$100,000 00	
6 per cent., issued per chap. 216, Laws of 1848, redeemable at pleasure	10,000 00	
5 per cent., issued per chap. 216, Laws of 1848, redeemable at pleasure	17,347 00	
5 per cent., issued on account of the Astor debt, redeemable at pleasure	3,000 00	
		$130,347 00

Comptroller's bonds:		
6 per cent., issued per chap. 225, Laws of 1849, redeemable 1st July, 1866	$64,700 00	
5 per cent., issued per Revised Statutes, payable on demand	25,330 94	
		$90,030 94
Insurance stock:		
100 shares in the Albany Insurance Company		2,500 00
Bank Fund stock:		
6 per cent., redeemable 1st February, 1866		23,352 67
Loans:		
7 per cent., loan to the New Paltz Academy		1,000 00
Money in the treasury		22,721 51
		$269,952 12

Revenue.

Balance in the treasury on the 30th September, 1861	$16,865 99	
Amount received into the treasury during the year ending 30th September, 1862 (see statement A)	42,481 31	
Amount transferred from the General Fund for interest received on deposits	1,042 55	
		$60,389 85
Amount paid from the treasury during the year ending 30th September, 1862, (see statement B)		42,481 58
Balance in the treasury on the 30th Sept., 1862		$17,908 27

The revenue of this fund is estimated for the current year, viz:

Interest on State stock	$7,617 35
Interest on Comptroller's bonds	5,148 55
Interest on Bank Fund stock	1,401 16
Interest on loan to New Platz Academy	140 00
Interest on money in the treasury	1,000 00
Dividends on insurance stock	400 00
	$15,707 06
Appropriation from the income of the U. S. Deposit Fund	28,000 00
	$43,707 06

Estimated payments during the same period:

Appropriations for dividends to the academies, viz:

From the income of the Literature Fund	$12,000 00	
From the income of the U. S. Dep. Fund	28,000 00	
		$40,000 00
For the purchase of books, maps, &c., for the academies		2,500 00
		$42,500 00

UNITED STATES DEPOSIT FUND.

Capital.

This fund consists of the following items, viz:

Loans on mortgage, in charge of the commissioners of the several counties		$3,593,882 53
State stock issued per chap. 216, Laws of 1848, redeemable at pleasure, viz:		
6 per cent	$274,739 44	
5 per cent	142,500 00	
		417,239 44
Money in the treasury		3,398 74
		$4,014,520 71

Revenue.

Amount received into the treasury during the year ending 30th September, 1862, (see statement A)	$256,891 18	
Amount transferred from General Fund, for interest on deposits	1,521 30	
		$258,412 48
Balance due the treasury 30th September, 1861	$23,161 35	
Amount of payments from the treasury during the year ending 30th Sept., 1862, (see statement B)	230,000 00	
Amount transferred to the capital of the fund for diminution in the loans under foreclosure of mortgage, etc.	1,611 25	
		254,772 60
Balance in the treasury on the 30th Sept., 1862,		$3,639 88

The revenue of this fund is estimated for the current year, viz:

Interest on loans on mortgage in the several counties	$230,000 00
Interest on State stock	23,609 36
Sales of lands	1,000 00
	$254,609 36

Estimated payments during the same period, viz:

Appropriations:	
Common school dividends	$165,000 00
Academies for dividends	28,000 00
Amount to be added to the capital of the School Fund	25,000 00
Academies for instruction of common school teachers	18,000 00
State Normal school, for support	12,000 00
	$248,000 00

(See statement F, for premises bid in for the State.)

TONAWANDA RAILROAD COMPANY SINKING FUND.

This fund consists of the following items, viz:

New York Central Railroad Company bonds:		
6 per cent	$28,000 00	
7 per cent	18,000 00	
		$46,000 00
Money in the treasury		21,881 78
		$67,881 78

LONG ISLAND RAILROAD COMPANY SINKING FUND.

Money in the treasury	$2,021 31

TIOGA COAL, IRON MINING AND MANUFACTURING COMPANY SINKING FUND.

This fund consists of the following items, viz:

Bank Fund stock, redeemable in 1866, 6 per cent	$2,150 00
Comptroller's bond, on demand, 6 per cent	287 82
Money in the treasury	3,954 71
	$6,392 53

MARINERS' FUND.

This fund consists of the following items, viz:

Mortgage of the American Seamen's Friend Society, without interest, (see chapter 37, Laws of 1845, for relief of said society)	$10,000 00
Money in the treasury	164 00
Money in the treasury, paid under protest	1,169 76
	$11,334 57

SOLDIERS' ALLOTMENT FUND.

Money in the treasury	$110 96

INDIAN ANNUITIES.

The amount of annuities payable to Indian tribes, under the several treaties with them, is as follows:

Cayugas	$2,300 00
Onondagas	2,430 00
Senecas	500 00
St. Regis	2,131 67
	$7,361 67

The foregoing statements exhibit the general condition of all the funds of the State, the accounts of which are kept in this office. The several statements hereto annexed exhibit more minutely and in detail the receipts, expenditures, and General Fund debt, and also the estimates for the next fiscal year.

APPROPRIATIONS UNPROVIDED FOR.

The estimates of receipts and expenses for the present year were carefully and judiciously made in the report of my predecessor. They called for a tax of seven-eighths of a mill for the General Fund, and if the estimates had been adhered to this would have been sufficient. But in view of large appropriations in the "Supply bill" it was deemed necessary to make it a full mill. No doubt was entertained of the sufficiency of that rate. It was discovered, however, upon the publication of the Session Laws, that a series of acts had been passed, most of them in the last hours of the session, containing independent appropriations, of which, with two or three exceptions, and those of small amounts, nothing was known in this office, for the payment of which no provision whatever was made, and which amounted in the aggregate to over $900,000. The following is a list of these appropriations:

Chapter	234,	For 20th Regiment Militia	$12,000
do	320,	Donation to Stockbridge Indians	10,000
do	397,	Organizing, etc., volunteers of 1861	500,000
do	421,	For uniforms of militia	50,000
do	434,	Donation to Susquehanna Seminary	12,000
do	468,	Donation to People's College	20,000
do	470,	Donation to Troy University	10,000
do	477,	The Militia Law	300,000
do	486,	For Oneida Lake canal	25,000
			$939,000

Considering the heavy taxation which was impending over the people, from both the State and nation, the above appropriations were, to say the least, very liberal; and they show how much easier it is to appropriate money, than to raise it. Very few payments have yet been called for under these appropriations, except on account of the Militia Law, but they remain in full force, are embraced in the estimated payments for the current year, and will cause the estimated deficiency at its close.

The Militia Law.

The act passed at the last session "to provide for the enrollment of the militia, the organization and discipline of the National Guard of the State of New York, and for the public defence," directs the enrollment of all persons liable to do military duty, and the payment of the enrolling officers and of as many assistants as the military authorities choose to authorise; the organization of 8 divisions, 32 brigades, 128 regiments, 1,280 companies, and such batteries, troops, or squadrons as may be formed in pursuance of the act; 32 non-commissioned officers and privates to be the minimum, and 100 the maximum number of each company. In time of insurrection or invasion, the commander-in-chief may order the companies to be filled to the maximum number, and, if necessary, may order a draft for that purpose. Out of the cities, the regiments are to conform as nearly as may be to the Assembly districts, so that there will be ten companies for each Assembly district. As soon as any company is organized, it is to be armed, and, if the men so elect, they are to be uniformed at the expense of the State. Each company is also to be supplied, at the expense of the county, with an armory and drill room, which may be rented, if it can be, if not it must be built. As it will be rarely possible to rent suitable buildings for such a purpose in the country, they will usually require to be erected. Counties having one member of Assembly will have ten armories, those having two members, twenty armories, and so on. Persons are to be employed to take charge of the respective armories, at $1.50 per day. The act provides also for annual camps of instruction, in each of the eight divisions, for drills, parades, and reviews, and for the issuing of ammunition, camp equipage, rations, and supplies, to any extent that may be required, at the expense of the State, and also for pay of the officers and men. It gives to the commander-in-chief the right to incur expenditures in many ways to an amount entirely unlimited. It also provides that the sum of $500 shall be paid annually out of the State treasury to the military fund of each regiment.

The act is very voluminous, containing 320 sections, and there are many other minor expenditures not referred to above. It is not intended here to enter upon any discussion of its merits. The motives of those who originated, and of those who passed it, were unquestionably most worthy and patriotic. Whether it can be so amended as to make it more simple, less expensive, and at the same time equally effective, and whether such a force, with some 5,000 officers of all grades, should be organized when 200,000 of our best soldiers and officers are absent in the field, are questions exclusively for the Legislature. The only object of this reference to the law is to ask attention to the immense expenditure which it calls for, and the necessity of providing for it, if the act is to be carried into effect in its present shape.

If the "National Guard" is to be organized upon the scale provided in the bill, for a time of war like the present, it will be composed of at least 128,000 men. The existing uniformed regiments are to be included in the organization, and they are estimated at about 18,000 men. Deducting these, it would leave 110,000 men to be newly armed and uniformed. This, it is presumed, could not be done, at present prices, for less than $40 per man, which would amount in the aggregate to $4,400,000. The erection of armories for only one-half of the companies (640) at, say $2,000 each, a low estimate, would make an expense to the counties of $1,280,000. It would be unsafe to estimate the various other expenses, which are fully authorised by the act, at less than $250,000.

The act provides that certain fines to be paid by members of the reserve militia for non-attendance at the annual parades, shall be paid into the treasury and devoted to the objects of the law. It would probably be a very large estimate to fix the amount to be received from that source at $200,000. It is more likely to be less than half that sum.

The appropriation of $300,000 in the act was among those herein before mentioned, for which no provision was made. It was, however, deemed important that the enrollment should proceed, and it was indispensable that the expenses of the Governor's staff and of the military departments, which were most laboriously engaged in organizing and forwarding troops, should be paid. Upon receiving assurances from the War Department that the treasury would be reimbursed for the cost of the arms issued by the State, arrangements were made to apply the money to this appropriation, and since the 1st of October last, payments to a considerable amount have been made on account of it. The bills for the enrollment are being presented in large numbers, and varying very widely in amount. Thus, in the county of Chemung two men were employed to do the work, and the cost was only $30, whilst in the county of Schenectady, with a much less population and smaller territory, 18 men were employed and the cost was $270. The cost in one company district in Troy was $207. These differences illustrate the absence of all regulation or limitation of the expenditures authorised by the act.

CHARITABLE INSTITUTIONS.

There are two classes of charitable institutions to which the Legislature has usually made appropriations. The first class embraces those which provide for the unfortunate from all parts of the State, whose maladies can be successfully treated only by the application of the skill and science to be found in large asylums or hospitals, such as the Institutions for the Blind, the Deaf and Dumb, the Asylum for the Insane, the Woman's State Hospital, &c. These are regarded as State institutions, and appropriately receive the bounty of the State. The second class includes a large number of orphan asylums, hospitals, dispensaries, and other institutions which, although established for most benevolent objects, are entirely local in their operations, and should be supported by the localities where they are situated. It is manifestly unjust to compel a county which provides entirely for its own poor, to pay taxes also for the support of the poor of other counties. And it may well be doubted whether these local institutions, appealing as they do to the best feelings of the human heart, would not be better supported by relying wholly upon voluntary contributions than by leaning upon the State treasury. The Legislature has not, however, hitherto taken any such view of the subject, and the estimates are therefore made in accordance with its usual practice.

The appropriation to the Institution for the Instruction of the Deaf and Dumb has heretofore been $39,000, for the instruction and maintenance of 260 pupils, at the rate of $150 each, and for the payment of the interest on the debt of the institution the further sum of $13,356, making altogether the sum of $52,356. It is represented, on behalf of the institution, that a larger number of pupils need to be provided for, and that $150 per annum is not sufficient to pay the actual cost of their instruction and maintenance. It is therefore proposed, as a more convenient and desirable mode of making the appropriation, that it should be $55,000, for 275 pupils, and that amount to cover the interest also, for which no appropriation would then be needed. This would only increase the usual amount by the sum of $2,644, and would provide for fifteen additional State pupils.

In 1861, the Legislature made an appropriation of $50,000 to "the Woman's Hospital of the State of New York," to be paid upon proof that $100,000 had been raised by donations from other sources and expended for the erection of a suitable building for said hospital. The progress of this humane enterprise has been seriously interrupted by the condition of the country, and the requisite donations from other sources have not been procured, nor has any part of the appropriation been paid. It is respectfully suggested that it should be renewed and continued for two years more.

STATE PRISONS.

The amounts received for earnings at the respective State prisons, will be found in the statement A, and the amounts expended in the statement B, hereto annexed. They contrast favorably with the results of the preceding year, and show a gratifying improvement. The total receipts for the year ending 30th September, 1861, were $92,939.11, and the total expenditures, (including forty thousand and five hundred dollars for building,) were $387,143.65. For the year ending 30th September, 1862, the receipts were $191,043.97, and the expenditures $311,744.81.

It will be seen by the statements referred to, that the receipts at the Auburn prison during the past year were $110,684.44, whilst the expenditures, exclusive of the Asylum for Insane Convicts, were $88,901.19. The expenses of the Asylum were $11,471.09, making a total of $100,372.28, and leaving a clear surplus of $10,312.16. This is very emphatic evidence of good administration.

The expenses at Sing Sing always largely exceed the receipts. The results, however, under the judicious management of the present able and faithful agent, who was appointed in April last, show a decided improvement and promise a much better state of things for the future. The receipts of the Clinton prison also are more than double the amount of the previous year.

It is worthy of notice that the number of convicts in all the prisons is rapidly diminishing. Since the war broke out convictions have been very few. The monstrous crime of attempting to destroy the life of the Republic seems to have absorbed, in a large degree, the lesser offenses against society.

County Treasurers.

The statute imperatively requires that the county treasurers shall pay the moneys received by them, into the State treasury, on the first of March in each year. A few of them obey the law in this respect, but many wantonly violate it, and use the money for their own private benefit. The result is great inconvenience, loss of interest, and, too frequently, defalcations and loss of the money itself. My predecessor repeatedly and earnestly called the attention of the Legislature to this pernicious practice. A striking illustration of the propriety of his suggestions and the necessity of acting upon them, has occurred within the past year, and will presently be referred to more particularly. An act was passed in the Senate, at the last session, with stringent provisions, to compel county treasurers to obey the law, but a strenuous effort was made on behalf of the delinquents to prevent action upon it in the Assembly, and the effort was successful. It is hoped that the Legislature will take prompt and effective measures to remedy an evil from which the public interest suffers so much, and which is so lawless and demoralizing in its tendency.

In June last, the accounts of all the county treasurers who were in default, were handed over, in accordance with the statute, to the Attorney General, for prosecution. Most of them have since been paid. The following is a list of those in arrear on the first day of October last, the payments made since that date being noted:

Balances October 1, 1862, *tax of* 1861.

Broome	$13,780 79
Essex	558 70
Fulton (since paid)	387 80
Monroe (since paid)	4,228 87

Montgomery (since paid $6,000)	$10,566 85
New York (since paid)	776,774 94
Onondaga (since paid)	1,000 00
Queens (since paid)	1,234 88
Rensselaer (since paid)	24,948 88
Richmond	7,323 70
Rockland (since paid)	14,357 25
Seneca (since paid)	5,905 66
Westchester	123,385 56

Although there was a large amount due from the city of New York, there was no delinquency of the city officers, as the taxes were being collected at that date, and the whole balance was paid over soon after. The only counties now remaining in arrear for any considerable amounts are Broome, Essex, Montgomery, Richmond and Westchester, as shown above.

DEFALCATION IN WESTCHESTER COUNTY.

The treasurer of Westchester county, following the practice of others, instead of paying over the public money, as the law requires, made some other use of it, and is a defaulter to nearly the whole amount of the tax received by him during the past year. An action was brought against him in the supreme court, and a judgment recovered for $127,585.56. An execution was issued and has been returned unsatisfied. In pursuance of the statute, I have directed the supervisors of the county to prosecute his official bond. Until the money can be collected upon the bond, or the amount raised by a new tax upon the property of the county, the General Fund will be deprived of the use of the whole sum. This adds another to the number of defalcations which have occurred within a few years, and all of them arising from the illegal practice of loaning and using money which belongs to the State and not to the treasurers. Such instances will undoubtedly continue to ccur until the practice shall be arrested by rigid legal enactments.

Taxes in the City of New York.

About one-third of the whole amount of the State tax is paid in the city of New York. Considerable embarrassment is caused by the fact that the taxes in that city are collected nearly a year later than in the other counties of the State. This delay would have produced serious annoyance during the past year had, not Mr. Comptroller Hawes very obligingly paid a large portion of the tax in advance of its actual collection.

There is an abuse connected with the receipt and payment of the taxes in that city which ought to be promptly corrected. The chamberlain, who has nothing to do with the collection of the tax, but simply has it deposited in a bank to his credit, and draws a check for the payment of it to the State, claims and exercises the right to retain for his own private compensation one per cent. upon the whole sum. This amounted, during the last year, to $22,129.30. In the present year it will be $26,107.15. These enormous amounts are paid for services which would be amply compensated by an annual salary of $500. If such large deductions must be made from the State taxes, the city, and not a favored individual, should receive the benefit of them.

Auction Duties.

The amount received for auction duties during the year was $76,536.04. The statement annexed, marked I, contains the names of the auctioneers from whom duties have been received, with the amounts paid by them respectively. A large proportion of the foreign goods which alone are subject to these duties are sold by a class of brokers for the purpose of avoiding the payment to which they would be liable if sold at auction. The revenue from this source would undoubtedly be increased very largely by subjecting these brokers' sales to the same duties as the auction sales. It is but simple justice to require the same payment from one class as from the other.

SALT DUTIES.

A large annual revenue was in former years derived from the Onondaga salt springs. The money produced by them has recently been very much increased in amount, but instead of finding its way to the treasury it lodges in the coffers of private individuals. The duties, which were once as high as twelve cents per bushel, have been reduced step by step to one cent per bushel, and have for several years produced a revenue to the State but little more than sufficient to enable it to pay the expenses of conducting the works. The canals are made to pay tribute to these works by furnishing water for the machinery, to the serious injury, at times, of the navigation; and until the past year they have been obliged to carry wood to them free of toll. The duties have been reduced to the present nominal rate for the alleged purpose of enabling the manufacturers to sell at low prices for the benefit of consumers. The latter complain, however, that this benevolent object seems to have been totally neglected during the past season, and that extensive sales and very high prices have added largely to the profits of the manufacturers, without much regard to the consumers. The statement hereto annexed, marked K, contains a copy of the report of the Superintendent. The income for the year was $81,189.43, the expenses $40,278.76, leaving a surplus revenue of $40,910.67, which is much better than usual. It will be seen that the manufacture for the next year is estimated at 10,000,000 bushels. It is respectfully suggested that the duty be raised to three cents per bushel. Taking the Superintendent's estimate, this would yield a revenue of $300,000. If $50,000 be allowed for expenses, it will leave a clear surplus of $250,000, which is not more than the State ought to receive from this valuable property.

The Constitution forbids the sale of the salt springs. The reason for this prohibition was that they might forever remain open to the competition of manufacturers, a great benefit to the whole people, and a source of revenue to the State. These objects have been thwarted by their falling, practically, under the control of a company which monopolizes the business, pays a trifling revenue, and demands high prices. Unless this state of things can be changed, it is further suggested that the proper steps be taken to amend the Constitution, so that the springs may be sold and the proceeds applied towards the extinguishment of the General Fund debt.

STATIONERY.

The statement hereto annexed, marked L, shows the cost of the stationery delivered to the public offices respectively during the last fiscal year.

CLERKS IN THE PUBLIC OFFICES.

The statement hereto annexed, marked H, contains the names of the clerks employed in the several public offices, the amounts paid to them respectively, and their present salaries. The practice of paying extra compensations beyond salaries has been discontinued in this office. The amount paid for salaries during the past calendar year, has been $10,000, instead of $11,300 paid for salaries and extras in former years. The duties of the clerks have been most faithfully performed. As their labors are being very much increased by the great number of militia accounts and the preparations for a sale of lands for taxes, it will not be safe to reduce the appropriation below the usual amount.

INDIAN ANNUITIES.

The amounts paid annually to the remnants of several tribes of Indians, if fairly divided, as they purport to be, among the individuals composing the respective tribes, must give to each one a sum so small as to be of no material benefit. It would seem to be wise, therefore, to take measures for purchasing and extinguishing these annuities. The management and payment of them are attended with trouble and annoyance, which are not compensated by any substantial benefit to the Indians.

CITY AND VILLAGE ASSESSMENTS UPON STATE PROPERTY.

A right is claimed by cities and villages, where the State owns an arsenal or other public building, to levy assessments upon it for local improvements. This should be prevented by law. Such property is now exempt from taxation for State or county purposes, and it should not be subjected to assessments by corporations. In cases where a payment from the State treasury would be proper, it should be left to the Legislature to make such an appropriation as it deems just.

PRINTING EXPENSES.

The cost of printing for the State has increased rapidly, and it is believed unreasonably. In 1844 it was but $34,848.18. It continued to increase until 1860, when it amounted to $181,796.76. In 1861 it was reduced to $132,496.25, and in 1862 to $102,498.85.

The last two years show a gratifying diminution in the cost, but it is still too large.

Contracts have been entered into, in accordance with the statute, for the printing for the Legislature and the several offices for the ensuing two years. Owing to the high price of paper these contracts are unavoidably at higher rates than heretofore. Messrs. Comstock & Cassidy were the lowest bidders, and were awarded the contracts for the Legislative printing at certain specified rates; the total amount for each year not to exceed $50.000. For the last two years this limit was $38,000. An erroneous impression has frequently prevailed in the Legislature that, as the printing is done by contract, the cost is not increased by ordering any amount of it. This will not be so until the amount is swelled beyond $50,000. With proper care and economy it may be kept far below that sum.

Messrs. Weed, Parsons & Co. were the lowest bidders, and were awarded the contract for the printing for the public offices.

Among the payments for printing during the last fiscal year, was the sum of $21,368.71, for publishing the official canvass. This expense is a mere waste of money; the publication is wholly useless and should be discontinued.

There was another expenditure of $2,159.85 for printing slips of the Session Laws to be sent to the different counties for publication. This should and could be performed by the State paper at a cost not exceeding $50.

An evident interpolation in the law relating to the sale of lands for taxes, chapter 427, Laws of 1855, requires the advertisement of the lands, in all the counties, to be published in the State paper, where it is entirely useless after the extraordinary care taken to have the most ample notice given in other ways. The cost of this one advertisement in the State paper, at the last sale, was $5,943.75. The statute should be amended in this respect.

STATE OF THE CURRENCY.

At the close of the year 1861, the banks suspended specie payments. They were induced to do this, not by reason of any material loss of specie from their vaults, nor any pressing demand for exportation, but from motives of caution in view of the probable exigencies to arise from a continuance of the war and the financial measures of the Federal Government. One of those measures, then foreshadowed and subsequently adopted, was the issue of treasury notes, not redeemable in coin, and made a legal tender in payment of all demands, except duties on imports and interest on the public debt. It would be out of place to discuss the propriety of that measure in this report. Indeed, the plea of inexorable necessity, upon which alone it is attempted to be justified, admits of no discussion, provided that such necessity really existed. The effect produced upon the financial affairs of the State, by the events referred to, is the only matter which requires to be presented here.

In obedience to an inflexible law, gold and silver disappeared as rapidly as the cheaper currency came into use; and the same alleged necessity, which led to the issue of ten and five dollar notes in place of eagles and half eagles, soon led the government to issue ten and five cent substitutes for dimes and half dimes. So long as one cent postage stamps were permitted to circulate as money, even the nickel cents went out of sight, because they were of more intrinsic value than the paper stamps. The discontinuance of one cent stamps, as currency, has brought back the cents; but the three cent pieces, the dimes, the twenty-five and fifty cent coins still refuse to appear, although probably none of them have gone from the country. A cheaper currency has taken their place, and they remain in their hiding places.

The tendency of a cheap currency is always towards inflation. Hence, when the government commenced issuing irredeemable notes, the suspended banks, with a very few exceptions, began to compete with it in the same direction, and largely increased their circulation. Cities, villages, and business firms, under the pressure for small change, also commenced the manufacture of money and issued promises to pay. To what extent the currency has been inflated by these means, beyond the legitimate wants of commerce, it is impossible to know. So far as the new paper issues merely take the place of the specie and convertible bank notes, which were previously in circulation, there is no material redundancy; but so far as they go beyond that point there is redundancy, and the extent to which they go beyond it, measures substantially the extent of the inflation.

The Secretary of the Treasury, in his recent annual report, shows a clear comprehension of the rapid downward tendency of this state of things, and proposes to arrest it by stopping the further issue of Treasury notes. Upon the success of this effort depends the financial fate of the country. If it fails, the history of "continental money" and of "French *assignats*" reveals the future which lies before us. Far better, more safe and more economical would it be to levy a direct tax sufficient to raise forthwith one-half the annual expenses of the war than to resort to a further issue of irredeemable legal tender paper. There is no tax which is ultimately so heavy as such a currency, which always demands further and still further expansion, and the volume of which swells with every new issue until at last it collapses in utter worthlessness and ruin. Nothing can be more certain than that this will be, as it always has been, the end of all such experiments. The precious metals are the representatives of value, and constitute the basis of a sound circulating medium throughout the whole commercial world. Depart from that standard as far as we may, the laws of trade, more potent than all statutes, will ultimately drive us back to it; and the farther we depart from it the more severe will be the suffering through which we shall be compelled to return.

SPECIE PAYMENTS BY THE STATE.

The great depreciation of the currency, produced by excessive issues of irredeemable paper, and by the spirit of speculation, always engendered thereby, involves the finances of the State in difficulties of a very serious character. Ever since the State first pledged its faith for the payment of money loaned to it upon its stocks, it has held itself bound in honor to pay both principal and interest of its funded debt, in specie, or its equivalent. Through all the commercial revulsions that have occurred, it has adhered firmly to this principle; but never has it been called upon to maintain its honor by such heavy pecuniary sacrifices as at present.

Since the suspension of specie payments by the banks, there has been paid by the State $2,100,000, principal of the Canal debt, and $800,000, principal of the General Fund debt, besides the quarterly interest on the whole debt, making altogether about $4,600,000, all of which has been paid in coin, or its equivalent. The two amounts of principal and all the interest prior to July last, were paid without any expense to the State. Of the Canal debt, the sum of $1,200,000, due in January last, was paid by the bank of the Manhattan Company, from the specie and specie funds which had been deposited with it before the suspension. For the quarterly interest due in April, and for the $900,000 of principal due in June, the banks which held the deposits were invited to pay in coin to the extent of thirty per cent. of the amounts which they had in hand at the time of the suspension. To this invitation all the deposit banks, over fifty in number, responded favorably, with three unimportant exceptions. Nearly all the coin required for those payments was thus furnished, and the deficiency was generously made up by the Manhattan Company.

For the payment of the $800,000 of General Fund debt, due in July, it became necessary to make a deficiency loan. This was advertised for and required to be paid in coin, and so high was the credit of the State, that it was promptly taken, subject to that condition, at a premium averaging over ten per cent. Thus the $800,000 of principal was paid, and the premium, being also paid in coin, was more than sufficient to pay the July interest on the General Fund debt.

For the interest on the Canal debt, due in July, the Manhattan Company, under the advice of the Commissioners of the Canal Fund, purchased the coin, at the rate of 9¾ per cent. In October it purchased in like manner for both debts, at 23¼ per cent., and for the interest due the first of January, instant, it has been obliged to pay 33¼ per cent.

These are high rates, and show either a rapid depreciation of the currency, or a wild speculation in coin. They also force upon the Legislature the consideration of the question, what shall be done in this respect hereafter?

The Commissioners of the Canal Fund, and the Comptroller, especially, have felt keenly the responsibility cast upon them in regard to these payments; but in view of the past history of the State, of its high credit as a specie paying State, both at home and abroad, of the pecuniary advantages which it has received therefrom, of the fact that the Federal Government, and also the States of Massachusetts, Pennsylvania, Ohio, Indiana and Illinois, were paying the interest upon their stocks in coin, they could not and did not hesitate to direct the Manhattan Company to make the payments for this State in the same way. Unless we are to be entirely overwhelmed with irredeemable legal tender notes, it is most respectfully suggested that the same considerations should induce the Legislature to provide for a continuance of the policy which has hitherto been pursued. It will doubtless require heavy pecuniary sacrifices, but these will be the test of the true honor of the State, which, like that of an individual, is of little worth if maintained only when it costs nothing.

It is, however, annoying, not to say degrading, for the State to be compelled to go into the market every quarter and buy coin. The fact that it is to be a purchaser, is used by speculators to influence prices. To avoid this evil, when the banks suspended in 1837, the State, instead of buying specie, paid what was deemed a fair equivalent, the amount of which was fixed by a committee of the leading bankers in New York. The proceedings which took place on that occasion, will be found fully stated in the report made by the Commissioners of the Canal Fund to the Legislature, in January, 1838. See Assembly Doc. of 1838, No. 5, vol. 1. The same course might be adopted with advantage by the Legislature now. Indeed, it is difficult to see how any other permanent policy can well be adopted. In no other way can the Legislature be enabled to make definite and certain appropriations for this object. The equivalent should be fixed as nearly as possible at the real difference between specie and the paper currency. It is very certain that the market price does not indicate that difference, for it rises and falls from day to day, under the influence of speculation, and of the hopes and fears of the community, like the price of a "fancy stock." The Federal Government, unintentionally, no doubt, but most effectually, aids these speculations by holding the gold in deposit for those who are trading in it, and paying them interest upon it. It scarcely comports with the dignity of the State to be subject to the eccentric fluctuations of the market, or to allow itself to be made a foot-ball for brokers and speculators.

It is also worthy of consideration whether the banks should not be compelled in some manner to contribute to an expense so largely for their benefit. They have taken the liberty of relieving themselves from specie payments. They hold nearly two-thirds in amount of the State stocks. They issue their irredeemable notes, which are paid to the State for taxes and tolls, and with the same notes at an enormous discount they expect the State to buy specie and pay back to them for interest on the stocks which they hold. A special tax to compel them to contribute to this object, so long as they enjoy the privileges of suspension, would seem to be appropriate. The whole subject, with all its difficulties is, however, submitted to the superior wisdom of the Legislature.

TAXATION.

The largest portion of the heavy taxation during several years past has been for town, county, and school purposes. The taxes for these purposes have increased enormously. Twenty years ago, in 1842, they amounted, in the aggregate, to only $3,626,793.97. They now amount to $16,000,000, without including incorporated cities and villages. The following table shows the increase from year to year:

YEAR.	Aggregate valuations.	State taxes.	Town, county and school taxes.
1842	$620,676,346	$619,693 81	$3,626,793 97
1843	596,262,444	592,008 57	3,373,171 57
1844	599,891,923	655,067 50	3,588,034 31
1845	605,646,095	361,309 62	3,809,218 33
1846	616,824,955	370,557 44	4,276,904 44
1847	632,699,993	302,579 27	4,541,046 33
1848	651,619,595	325,638 72	4,969,819 51
1849	665,850,737	334,555 96	5,214,425 32
1850	727,494,583	364,003 75	5,948,783 58
1851	1,077,831,630	578,546 88	6,180,891 38
1852	1,168,335,237	292,641 69	6,715,046 39
1853	1,266,666,190	1,285,124 88	8,060,097 03
1854	1,364,154,625	1,020,926 49	8,615,164 36
1855	1,402,849,304	1,751,717 78	9,924,454 52
1856	1,430,334,696	1,430,000 02	11,312,845 04
1857	1,433,309,713	3,221,775 42	11,941,362 94
1858	1,404,907,679	2,457,533 80	12,968,004 78
1859	1,404,913,679	2,458,599 10	13,894,687 46
1860	1,419,297,520	4,376,167 35	14,579,857 15
1861	1,441,767,430	4,505,523 19	15,896,753 00
1862	1,449,303,948	5,797,215 79	*16,000,000 00

* Estimated.

The valuations since 1859 are given as they were ascertained and fixed by the State Board of Equalization. Some efforts have been made to repeal the law of 1859 and dispense with the office of State Assessors. But the experience of every year shows that this cannot be done without subjecting the counties to the same injustice and inequalities in valuations which made that law necessary. It may, however, be practicable to establish the present valuations for a period of three or five years, and dispense with the services of the Assessors in the mean time.

Considerable discussion has taken place in regard to a general revision of the tax and assessment laws. There are, doubtless, defects in those laws, some of which may be remedied by judicious amendments. But in view of the heavy taxation by the General Government, and under a system entirely new in this country, it would, perhaps, be the wisest course to wait until that system is rendered more perfect, by a more thorough examination of the principles of taxation, and endeavor in revising our own laws to have them in harmony, as far as may be, with those of the Union. It is desirable that some plan should be adopted, if possible, to avoid having conflicting tax laws and two different classes of tax gatherers in the State.

Some serious questions have already grown out of the Federal legislation upon this subject. An act of Congress exempts the stocks of the United States from taxation. The banks in the city of New York have purchased those stocks to about the amount of their capital, some $70,000,000, and thereupon claim that their capital is exempt from taxation. If this claim can be sustained, the whole banking capital of the State, amounting to over $100,000,000, will soon become exempt, and that amount will have to be stricken from the aggregate valuation. This question is now pending in the courts; a majority of the judges in the New York general term of the supreme court having decided in favor of the exemption. It is not believed, however, that this decision can be sustained. The States, it would seem, must have the right to tax the capital of the banks chartered by themselves, without regard to the nature of the securities in which such banks may choose to deal.

Another important question which has arisen is whether the Federal government has the right to tax the State treasury. Having learned that the Commissioner of Internal Revenue held that the Stamp tax was applicable to the transactions of the State government, I addressed to him a letter upon that subject, a copy of which will be found hereto annexed, marked O. The Commissioner, as I am informed, referred this letter to the Solicitor of the Treasury for an opinion, but up to the time of this report going to press, no answer has been received. In the meantime the House of Representatives has passed an act amending the tax law, so as expressly to exempt State governments from its operation, but the Senate has rejected such amendment. This would seem to indicate that the latter body is of opinion that the Federal government has the right to take away from the States, by taxation, the money which they have collected to pay their own expenses. If this is so, it of course puts the funds and the existence of every State government at the mercy of the Federal government. If the Legislature is disposed to adopt this view of the question, it will of course make the requisite appropriation, as no stamps can be paid for from the treasury until an appropriation for that purpose shall be made.

Taxes for the Ensuing Year.

The valuations of real and personal estate, and the amount of taxes in the several counties for the year 1862, will be found in the tables hereto annexed, marked M. and N. The valuations in the cities of New York and Brooklyn were reduced about fifty millions of dollars, but the amount was more than made up by increased valuations in the interior counties. The aggregate for 1862 is $1,449,303,948, which exceeds the aggregate for the previous year by the sum of $7,536,515.

The State taxes for the year 1862 were as follows:

For the General Fund,	1 mill	$1,449,303 95
For the United States,	2 do	2,898,607 89
For the canals,	1 do	1,449,303 95
For the School Fund,	¾ do	1,086,977 96
	4¾ mills.	$6,884,193 75

The taxes for the ensuing year need not and ought not to be more than one-half of the above amount. The direct tax of the United States, having been suspended by act of Congress, will not be levied. Nothing will be required by the canals, except the one-fourth mill tax for interest and Sinking Fund of the $2,500,000 borrowed to pay the floating Canal debt in 1859. This is a part of the Canal debt, and should be paid from the surplus revenues of the canals; but the Constitution is imperative in requiring money borrowed in that way to be paid by a direct tax. Consequently, the tax must be levied until the debt shall be paid, however large the surplus revenues may be. But it will be entirely proper to appropriate an equal amount from the surplus to the General Fund, and thus reduce the tax required for that Fund. If this should be done, only three-fourths of a mill will be required for the General Fund. There will, also, be required a one-half mill tax to cover the estimated deficiency at the close of the current fiscal year. The whole amount of taxes required to be levied will then be as follows:

For the General Fund,	¾	of a mill	$1,086,977 96
For the School Fund,	¾	do	1,086,977 96
For estimated deficiency,	½	do	724,651 97
For interest and Sinking Fund on $2,500,000 of Canal debt	¼	do	362,325 98
Total	2¼	mills,	$3,260,933 87

With reasonable economy the taxes for the ensuing year need not exceed the above amount, being less than one-half the amount for the preceding year. If any new works are undertaken or any extraordinary appropriations are made, it will be necessary to increase the taxes sufficiently to cover them.

Respectfully submitted.

LUCIUS ROBINSON, *Comptroller.*

DOCUMENTS

ACCOMPANYING THE ANNUAL REPORT OF THE COMPTROLLER.

(A.)

STATEMENT

Of moneys received into the Treasury during the year ending 30th September, 1862.

On account of the General Fund.

Permanent Revenue.

Auction duty	$77,358 57	
Salt duty	87,418 98	
Fees of the Secretary's office	1,896 63	
Fees of the Comptroller's office	588 29	
Fees of the Clerk's office of the Court of Appeals	407 29	
Pedlers' licenses	3,400 00	
		$171,069 76

Temporary Revenue.

Interest on Comptroller's bonds of the city of New York	$21,008 25	
Tax on foreign insurance companies	2,296 60	
Sales of the Natural History of New York	1,428 74	
Sales of lands	433 28	
Tolls of the Cayuga lake inlet	120 97	
		25,287 84
State tax, exclusive of the ¾ mill school tax (for the net proceeds of the tax levied in 1861, see statement E)		4,544,985 29

State Prison Earnings.

Sing Sing prison	$43,747 80	
Auburn prison	110,684 44	
Clinton prison	36,611 73	
		191,043 97

Public Defense.

United States Government repaid on account of advances for the expenses of the volunteer militia	$1,113,000 00	
United States Government for advances to pay volunteers from this State, mustered into the service of the United States March 1, 1862, per chapter 25, Laws of 1862	56,400 00	
United States Government for return of duties	29,833 50	
United States Government for sale of 347 Sharp's carbines, with boxes	11,365 00	
Inspector General, for unexpended balance of moneys advanced to him	299 00	
Quartermaster General, for unexpended balance of money advanced to him	3,714 96	
		$1,214,612 46

Miscellaneous.

Clerk of the Senate, for unexpended balance of moneys advanced to him, refunded	$701 83	
Overpayment on account of redemption of lands sold for taxes, refunded	40 66	
Receiver of the Mutual Safety Insurance Company, in full, for judgment against said company for taxes returned to the Comptroller's office	15,000 00	
A. S. Thurston, State assessor, for unexpected balance of the appropriation in the Supply Bill of 1860, refunded	64 33	
Amount erroneously refunded for payment of taxes, repaid	28 63	

Erroneous payment from the treasury for a lot of land, refunded	$2 04	
Military Secretary, for unexpended moneys advanced to him for contingent expenses, refunded	54 95	
E. Clapp and T. Stratfield, for expenses of a committee applied for by them to examine certain lands under water, &c	110 00	
Proceeds of the sale of timber, procured per chap. 294, Laws of 1861, for the public defense	1,055 14	
		$17,057 58

Moneys received for previous advances, or which were subsequently to be paid from the treasury, viz:

Non-resident Taxes.			
Arrears	$32,936 65		
Interest	5,788 92		
Redemption of lands,	155,279 69		
Sales of lands	16,604 10		
		$210,609 36	
Banking Department.			
Free banks	$23,596 35		
Incorporated banks	3,319 55		
Savings banks	710 80		
		27,626 70	
Railroad Companies.			
The salary of the Deputy State Engineer, clerk hire and printing reports		5,420 78	
Insurance department, for fees and assessments		10,700 00	
Interest on treasury deposits		18,235 05	
Temporary loan in anticipation of the State tax for public defense,		1,500,000 00	
			1,772,591 89
Total receipts on account of the General Fund,			$7,936,648 79

On account of the General Fund Debt Sinking Fund.

From the canal revenues	$350,000 00	
Avails of State stock issued on account of deficiency in the fund, viz:		
Principal	800,000 00	
Premium	83,870 20	
		$1,233,870 20
On account of the Metropolitan Police Fund		1,910,100 00

On account of the School Fund.

Capital.

Principal of bonds for lands	$16,187 64	
Principal of bonds for loans	38,042 10	
Sales of lands	3,195 34	
Appropriation from the income of the United States Deposit Fund,	25,000 00	
		82,425 08

Revenue.

Interest on bonds for lands	$17,142 02	
Interest on bonds for loans	26,278 19	
Interest on State stock	65,803 27	
Interest on Comptroller's bonds	21,378 00	
Interest on loan of 1840	2,809 86	
Rent of lands	39 50	
Dividends on stock of the Manhattan Company	5,000 90	
	$138,451 74	
From the income of the United States Deposit Fund	165,000 00	
		303,451 74

On account of the Literature Fund.

Revenue.

Interest on State stock	$7,467 32
Interest on Comptroller's bonds	4,912 83
Interest on Bank Fund stock	1,401 16
Dividends on stock of the Albany Insurance company	550 00
Amount refunded by the Red Creek Union Academy	150 00
	$14,481 31

From the income of the United States Deposit Fund	$28,000 00	
		$42,481 31

On account of the United States Dep. Fund.

Capital.

Principal of mortgages for loans		2,850 00

Revenue.

Interest on mortgages for loans	$232,961 82	
Interest on State stock	23,759 36	
Sales of lands	170 00	
		256,891 18

On account of the Tonawanda Railroad Company Sinking Fund.

Interest on investments	$4,602 01	
Principal of mortgages	7,750 00	
Contribution	1,500 00	
		13,852 01

On account of the Tioga Coal, Iron Mining and Manufacturing Co. Sinking Fund.

Contributions, (2 years)	$2,800 00	
Interest on investments	146 27	
		2,946 27

On account of the Long Island Railroad Co. Sinking Fund.

Contribution		2,100 09

On account of the Soldiers' Allotment Fund.

For soldiers' allotments		15,657 87
		$11,803,274 54

(B.)

STATEMENT

Of warrants drawn on the Treasury during the year ending 30th September, 1862.

On account of the General Fund.

Salaries, viz :

Governor		$4,000 00
Judges of the Court of Appeals		12,500 00
Justices of the Supreme Court		105,807 69
State Reporter		2,000 00
Clerk of the Court of Appeals		2,000 00
Dep. Clerk of the Court of Appeals		1,500 00
Attorney General		2,000 00
Deputy Attorney General		1,500 00
Secretary of State		2,500 00
Deputy Secretary of State		1,500 00
Comptroller		2,500 00
Deputy Comptroller		2,000 00
Accountant and Transfer Officer of the Comptroller's Office		1,750 00
Treasurer, (exclusive of $1000 compensation from the Banking Department,)		1,500 00
Deputy Treasurer		1,500 00
Superintendent of Public Instruction		1,041 66
Deputy Superintendent of Public Instruction, viz :		
Salary	$1,500 00	
" as acting superintendent	783 33	
		2,283 33

Private Secretary to the Governor		$2,333 32	
Commissary General		1,000 00	
Adjutant General		983 70	
Assistant Adjutant General		666 67	
Superintendent of Weights and Measures		500 00	
State Assessors, viz:			
For services	$3,310 47		
For traveling expenses	274 39		
		3,584 86	
Clerks in the office of the Governor		2,115 58	
Clerks in the Comptroller's office		11,204 14	
Clerks in the Secretary's office		7,000 01	
Clerks in the Treasurer's office		3,400 00	
Clerks in the office of the Superintendent of Public Instruction		2,050 00	
Clerks in the office of the Clerk of Court of Appeals		3,500 00	
Clerks in the office of the State Engineer and Surveyor		3,050 00	
Clerks in the office of the Attorney General		1,112 50	
Clerk in the Adjutant General's office		900 00	
Clerks in the Inspector General's office and other expenses		320 38	
			$191,603 84

Legislature, viz:

Compensation of members and officers		$88,924 00	
Advances for contingent expenses, viz:			
Clerk of the Senate	$4,046 50		
Clerk of the Assembly	10,276 91		
		14,323 41	
Expenses of Committees, Clerk hire, etc.		4,127 00	
Pay of witnesses for attendance before Committees		230 64	
Postage		6,960 18	

Pay of Chaplains	$600 00	
Manual	1,349 50	
Books for the libraries of the Senate and Assembly	60 37	
Expenses in procuring copies of accounts of certain expenditures from Washington	70 91	
Dennis McCabe, for counsel fees and expenses incurred in contesting a seat in the Assembly in 1861	140 00	
For engrossing on parchment the Ericsson and Worden resolutions	150 00	
For preparing plans for the improvement of the Senate chamber	135 00	
		$117,071 01

Expenses of the Public offices, viz:

Secretary's office	$1,935 87	
Comptroller's office	1,803 64	
Treasurer's office	634 23	
Attorney General's office	108 55	
Superintendent of Public Instruction office	822 50	
Clerk's office of the Clerk of the Court of Appeals	1,456 18	
State Engineer and Surveyor's office	493 06	
Adjutant General's office	1,607 08	
Inspector General's office	17 85	
		8,878 96

Postage of Official Letters, viz:

Governor	$433 03	
Comptroller	473 65	
Secretary	1,003 33	
Treasurer	143 44	
Superintendent of Public Instruction	317 79	
Attorney General	133 96	
State Engineer and Surveyor	237 65	

Clerk of the Court of Appeals		$122 29	
Adjutant General		174 00	
			$3,039 14
Expenses of the Capitol, viz:			
Repairs, improvements and other miscellaneous expenses		$3,611 50	
Superintendent's salary	$900 00		
Extra	150 00		
		1,050 00	
Firemen and labor		3,068 34	
Women for cleaning		3,447 50	
Miscellaneous		1,279 20	
			12,456 54
Expenses of the State Hall, viz:			
Repairs, cleaning, labor, gas, water, &c.		$4,108 84	
Superintendent's compensation		504 00	
			4,612 84
Expenses of the State Library, viz:			
Salaries of the Librarians		$4,154 18	
Advances to the Secretary of the Regents of the University, viz:			
For purchase of books	$2,000 00		
For binding, lettering, &c	1,200 00		
For exchanges	400 00		
For contingent expenses	1,244 00		
		4,844 00	
Gas		204 00	
Repairs, improvements and cleaning		383 63	
			9,585 81
Expenses of the Hall for the State Cabinet of Natural History and the Agricultural Museum, viz:			
Repairs, cleaning, labor, gas, fuel, &c.		$2,551 82	
Curator's salary		1,041 66	
Keeper's salary		700 00	
Taxidermist's salary (1 month)		41 68	
Increase of the Cabinet		800 00	
			5,135 16
Expenses of the Regents of the University, viz:			
Secretary's salary		$2,000 00	

Messenger's salary	$200 00	
Advance to the Secretary for contingent expenses	500 00	
		$2,700 00

Printing for the State. viz:

Legislative	$51,500 00	
Publishing official canvass	21,368 71	
Publishing official notices	3,118 77	
Session Laws and binding	3,178 33	
Catalogue of the State Library	3,504 85	
Governor's proclamation	204 30	
Publishing Session Laws of 1861,	482 18	
Manual, diagrams, &c	4,939 10	
State Engineer's reports on railroads of 1860	3,406 33	
Journals of the Legislative Council of New York	4,774 14	
Copies of the Session Laws to be transmitted by the Secretary to county treasurers, &c.	2,159 85	
Printing and binding under the direction of the Commissioners of the Code	1,284 16	
Printing and binding the Civil Code	2,101 97	
Attorney General's office	476 16	
		102,498 85

United States Direct Tax:

On account of and in part payment of the quota payable by the State of New York, under the act of Congress of 5th August, 1861	400,000 00

State Tax, viz:

For balance due on the tax levied in 1860, viz:

1⅛ mill for the canals. revenue and deficiency	$1,580,742 61	
⅓ mill for completion of the canals	118,368 17	
		$1,699,110 78

For the proceeds of the tax levied in 1861, viz:

¼ mill for payment of the canal loan of $2,500,000	$356,837 44

½ mill for completion of the canals....	$713,674 87		
		$1,070,512 31	
			$2,769,623 09
Expenses of the Onondaga Salt Springs, viz:			
Advances to the superintendent on his estimates of expenses.....		$39,000 00	
North side cut canal and lake outlet improvement		4,074 44	
			43,074 44
Colonial History, viz :			
E. B. O'Callaghan, salary........		$375 00	
F. McLoughlin, salary...........		200 00	
Printing index.................		5,388 00	
			5,963 00
Natural History, viz:			
James Hal, salary.............		$2,000 00	
do for fossils..........		2,117 73	
Printing, binding, engraving, &c..		5,374 89	
			9,492 62
Expenses of the State Prisons, viz:			
Sing Sing: for support............	$108,768 82		
Female prison.....	12,251 04		
On account of moneys received for sale of lands...........	1,317 20		
For books.........	300 00		
For Croton water..	9,000 00		
		$131,637 06	
Auburn: for support	$78,750 32		
For building	4,350 87		
For repairs........	5,000 00		
For books.........	200 00		
F.W. Whitlock's contract	200 00		
Clerk of prison, extra	400 00		
		88,901 19	
Clinton: for support	$54.281 23		
For books..........,	100 00		
Boilers, &c., for warming........	1,500 00		

Fences	$500 00		
Repairs of plank road	1,500 00		
Building	1,500 00		
Judgment obtained against the agent	107 68		
		$59,488 91	
Inspectors, for salaries	$4,800 00		
For traveling expenses	1,540 36		
		6,340 36	
Transportation of convicts		13,906 20	
		$300,273 72	
Asylum for insane convicts		11,471 09	
			$311,744 81
Indian Affairs, viz:			
Pay of attorneys and agents		$634 40	
Onondagas, for relief		73 24	
			707 64
Incidental expenses of government			750 00
Stationery for the public offices			3,066 68
Fuel for the Capitol, State Hall, and State Library			2,768 84
Agent's compensation to examine auctioneers' accounts			733 34
Pay of constables and criers for attendance upon the Court of Appeals and Supreme Court			1,300 00
Commissary's department			20,772 81
Keepers of arsenals			100 00
Transfer office in New York, for stationery, &c.			213 50
Costs of suit, counsel fees, &c.			4,367 59
Apprehension of criminals			30 67
Rent and taxes of the house occupied by the Governor			3,350 36
Agriculture, viz: societies of the several counties, and the State society, for promotion of agriculture		$4,767 00	
Entomologist's salary		1,000 00	
			5,767 00
County clerks, for fees			14 14

Apprehension of fugitives from justice	$212	53
James Minor, his annuity	60	00
Transportation, including expenses of boxes, of the journals and documents of the Legislature, reports, books, &c., and packages for the public offices	5,200	96
Courts martial	50	00
New York Volunteers, (Mexican war)	288	00
Compensation of the commissioners to examine the accounts of the Treasurer, and of the Canal and Banking departments	1,200	00
Quarantine, for expenses	6,641	34
Militia of the war of 1812, expenses	125	00
State arsenals, for repairs, etc.	4,952	20
Supreme Court, library at Binghamton	986	02
Attorney General's library	154	00
Reports of the Court of Appeal and the Supreme Court, for exchange with other States	570	87
Interest on the Comptroller's bonds, issued for the benefit of the Stockbridge Indians	2,160	00
Interest on the Albany basin loan	9,629	28
Interest on the $50,000 canal loan, per chap. 374, Laws of 1849	3,000	00
Interest on $200,000 Oswego canal loan, per chap. 501, Laws of 1851	12,000	00
Interest on $200,000 temporary loan to complete the canals	10,000	00
Cayuga lake inlet	183	94
Agricultural college, for interest on debt	2,500	00
Washington head quarters, keeper's salary (two years)	200	00
Interest on temporary loan to the treasury	200	00
Interest on temporary loan, made in anticipation of the State tax for the public defense	131,188	02
Public defense, for expenses of the volunteer militia, etc., chap. 277, Laws of 1861	528,914	70
Militia of the State, for arms and equipments and public defense	297,652	85
New York harbor defense	1,761	50
Stockbridge Indians, for their benefit	10,000	00

Expenses of Public Lands, viz:		
For paving, assessments, etc.	$154 75	
Lieutenant Governor, for services and travel, as Commissioner of the Land Office	547 80	
State Engineer and Surveyor, for expenses in visiting New York, etc.	200 00	
D. Willers, Jr., for services, per resolution of the Commissioners of the Land Office	200 00	
State Engineer and Surveyor, for survey of lands in the city of New York	3,311 01	
		$4,413 56
Institution for the Deaf and Dumb, New York:		
For support and instruction of pupils	$37,757 25	
For interest on debt	13,355 98	
		51,113 23
Institution for the Blind, New York:		
For support and instruction of pupils		20,501 30
Society for the Reformation of Juvenile Delinquents, New York:		
For support	$24,000 00	
For building	25,000 00	
		49,000 00
House of Refuge, Western New York:		
For support		25,000 00
Lunatic Asylum.		
Salaries	$8,750 16	
Support of Mark Jack, an insane Indian	160 56	
Support of female convicts	614 06	
		9,524 78
Idiot Asylum.		
For support	$18,000 00	
For purchase of land	5,000 00	
		23,000 00

Orphan Asylums, viz:

Roman Catholic Orphan Asylum, New York	$7,443 03
New York Orphan Asylum	1,162 97
Protestant Half Orphan Asylum, New York	164 05
Colored Orphan Asylum, N. York	1,806 82
Home for the Friendless, N. York	1,201 01
Orphans' Home of the Protestant Episcopal Church, New York	710 48
St. Joseph's Orphan Asylum, New York	1,270 49
Brooklyn Orphan Asylum	336 02
Roman Catholic Orphan Asylum, Brooklyn	2,482 16
Church Charity Foundation, in Kings county	186 34
Home for the Destitute Children of Seamen, in Richmond county,	242 16
Home of the Friendless, Poughkeepsie	831 74
Hudson Orphan Relief Association,	509 53
Albany Orphan Asylum	344 50
St. Vincent's Orphan Asylum, Albany	682 51
Home for the Friendless, Albany	67 34
Troy Orphan Asylum	271 08
St. Mary's Orphan Asylum, Troy	458 00
Buffalo Orphan Asylum	303 42
St. Joseph's Male Orphan Asylum, Buffalo	443 29
Buffalo Asylum for Foundlings and Widows	256 13
St. Vincent's Orphan Asylum, Buffalo	269 82
St. Mary's German Orphan Asylum, Buffalo	38 22
St. Mary's Orphan Asylum, Dunkirk	395 91
St. Patrick's Orphan Asylum, Rochester	258 19

Home for the Friendless, Rochester	$134 77	
Rochester Orphan Asylum	348 69	
St. Mary's Orphan Asylum, Canandaigua	456 26	
Oswego Orphan Asylum	395 47	
Home for Destitute, Friendless and Orphan Children, Watertown	417 15	
Cayuga Orphan Asylum	533 09	
Onondaga County Orphan Asylum,	764 90	
Syracuse Home Association	21 64	
Utica Orphan Asylum	217 17	
St. John's Roman Catholic Orphan Asylum, Utica	494 16	
Five Points House of Industry, New York	2,085 00	
Thomas Asylum, for Indian children	183 66	
Roman Catholic Orphan Asylum, New York, for payment of debts,	5,000 00	
Thomas Asylum, for Orphan and Destitute Indian children	992 00	
		34,179 17
Hospitals and other Charitable Institutions, viz:		
St. Mary's Hospital, Rochester	$5,126 58	
Brooklyn City Hospital	4,732 78	
Buffalo Hospital of the Sisters of Charity	6,297 92	
Buffalo Asylum and Hospital for Lying-in Women	889 56	
Buffalo General Hospital	1,302 81	
Marshall Infirmary, Troy	1,889 14	
Women's Hospital, New York	1,004 88	
Troy Hospital	1,415 41	
Albany Hospital	1,920 96	
New York Infirmary for Indigent Women and Children	419 96	
Children's Friend Society, Albany, for purchase of building	1,500 00	
Brooklyn Industrial School Association and Home for Destitute Children	5,000 00	
		31,500 00

Hospital for Sick and Wounded Soldiers, Albany,		$7,337 98
Troy University		5,000 00
L. S. Backus, for furnishing the "Radii" to the deaf and dumb persons of this State		300 00
Miscellaneous and temporary expenses, viz:		
For completion of the survey of the New York Harbor	$2,500 00	
Horace Allen, for amount awarded to him in connection with the improvement of the Rachel river	600 00	
John N. Parker, for services and materials furnished in repairing the barracks in the city of Albany, and also the arsenal and military storehouse, and the departments of the Adjutant, Inspector and Quartermaster Generals, &c.	1,752 18	
Robert P. Parrott, for ordinance stores furnished under the direction of the Commissary General	8,472 50	
Benjamin E. Bowne, for reimbursement of costs in defending title to lands purchased at tax sale, the title annulled by the Supreme Court	186 16	
E. H. Bender, for stationery, binding, &c., for the departments in the State Hall, and costs and other expenses	858 67	
Pilot commissioners, New York, expenses	4,987 66	
Charles Roome, colonel 37th regt. N. Y. State militia, for accoutrements furnished by him	834 40	
For the erection of a monument over the grave of the late Baron Steuben	500 00	
Treasurer of Wayne county, for erroneous payment into the treasury refunded	346 11	

Treasurer of Genesee county, for moneys paid into the treasury for taxes on Indian lands which were exempt from taxation, to be refunded by him to the persons authorized to receive the same	$616 87
Amount of an award made by the commissioners appointed by the Governor, per chap. 517, Laws of 1860, per resolution of the Commissioners of the Land Office	1,500 00
Treasurer of Clinton county, for expenses of the coroner's inquest upon the body of a keeper in Clinton prison, murdered by the prisoners, and other expenses	1,510 37
Amos Pilsbury, for expenses in visiting several State prisons by direction of the Governor	64 27
Treasurer of Cortland County, for erroneous payment into the treasury for State tax refunded	230 95
Surrogates, for fees	11 90
For expenses of the entertainment of the President and suite	127 00
For subscriptions to the New York Teacher, for gratuitous circulation to school officers and teachers	1,500 00
L. L. Doty, private secretary to the Governor, for extra services	500 00
G. R. Perkins, late Deputy State Engineer, for preparing railroad reports, &c.	600 00
E. B. O'Callaghan, for preparing index and superintending the printing of the journal of the Legislative Council of New York	812 50
T. McLoughlin, for services in as-	

sisting in preparing index, &c., as above		$66 56
William B. Lewis, Treasurer, for expenses incurred in defending his claim to office, contested by the late Treasurer		150 00
Philip Phelps, Deputy Comptroller, for additional compensation		3,000 00
Royal Chamberlain, for services rendered, as insurance clerk, in the Comptroller's office, in 1860,		150 00
A. N. Wakefield and D. B. McNeil, Jr., for services, as messengers, appointed by the Secretary of State		108 00
For extra services in the Adjutant General's office:		
Charles Evans	$600 00	
W. W. Perkins	600 00	
J. J. Johnson	600 00	
J. B. Stonehouse	600 00	
C. E. Huxley	100 00	
		2,500 00
Surgeon General, for his expenses in visiting Fortress Monroe, etc.		117 99
For stationery and postage for the Surgeon General's office		131 77
For clerk hire in the Surgeon General's office:		
W. E. Merriman	$200 00	
Cornelius Glen	150 00	
		350 00
Judge Advocate General, for clerk hire		153 61
John Sharts, for services, under the direction of the Secretary and Comptroller		100 00
R. F. Hicks, late clerk of the Court of Appeals, for costs of suit and expenses		122 39
Meads and Reynolds, for services		

and expenses incurred at the instance of the clerk of the Court of Appeals	$100 00	
Rich. Low, in full for extra services in the M. J. Lockwood case	200 00	
		$35,761 86

Moneys advanced and refunded, which had previously been paid, or were subsequently to be paid into the treasury, viz:

ADVANCES.

Banking Department.

Superintendent's salary	$5,000 00	
Dep'ty Superintendent's salary	2,800 00	
Treasurer's compensation	1,000 00	
Clerk hire, free banks	10,966 39	
Office expenses, free banks	5,824 04	
Clerk hire, incorporated banks	2,000 00	
Office expenses, incorporated banks	889 73	
Clerk hire, savings b'ks	925 00	
		$29,405 16

Insurance Department.

Superintendent's salary	$5,000 00	
Clerk hire	2,675 00	
Office expenses	1,907 68	
		9,582 68

Railroad Companies.

Deputy State Engineer's salary	$2,000 00	
Clerk hire	1,835 82	
Printing reports	281 25	
		4,117 07

Gas Companies.

Inspector of gas metres, salary	4,125 00

County Treasurer's.

For lands returned to the Comptroller's office for unpaid taxes	14,460 45

REFUNDED:

Redemption of lands sold for taxes	$143,628 69	
Erroneous payment of taxes	21,923 25	
Taxes for roads	3,511 94	
Interest on treasury deposits	8,319 95	
Principal of temporary loan to the treasury	300,000 00	
Principal of temporary loan made in anticipation of the State tax for the public defense	1,240,000 00	
		$1,779,074 19
Total payments on account of the General Fund		$7,146,966 26

On account of the General Fund Debt Sinking Fund.

Redemption of State stock	$1,011,000 00	
Interest on State debt	362,048 17	
Indian annuities	6,861 67	
		1,379,909 84
On account of the Metropolitan Police Fund		1,910,100 00

On account of the School Fund.

Capital.

Investments, viz:

Loan to town of Rome	$1,300 00	
Loan to town of Shawangunk	1,220 00	
Loan to town of Warren	800 00	
Loan to town of Westfield	2,000 00	
	$5,320 00	
Redemption of lands	111 44	
Surplus moneys refunded	49 92	
		5,481 36

Revenue.

Common school dividends	$264,000 00	
School Commissioners' salaries	55,937 68	
Teachers' institutes	8,548 79	
Indian schools	3,491 07	
Academies for the instruction of common school teachers	17,000 00	
		348,977 54

On account of the Literature Fund.

Revenue.

Dividends to academies	$39,812 46	
Dividends for books	2,669 12	
		$42,481 58

On account of the United States Deposit Fund.

Capital.

Loans on mortgage		1,865 00

Revenue.

For common school dividends	$165,000 00	
For increase of the capital of the School Fund	25,000 00	
For dividends to the academies	28,000 00	
For support of the Normal school	12,000 00	
		230,000 00

On account of the Soldiers' Allotment Fund.

For soldiers' allotments		15,546 91

On account of the Long Island Railroad Company Sinking Fund.

Redemption of State stock	$1,000 00	
Interest on State stock	5 00	
		1,005 00
		$11,082,333 49

(C.)

GENERAL FUND STATE DEBT.

State stock:

Amount issued on account of the Astor debt, per chap. 302, Laws of 1827, and chap. 86, Laws of 1832, redeemable at pleasure, 5 per cent.		$561,500 00
Amount issued to the Ithaca and Owego Railroad Company, per chap. 295, Laws of 1838, and chap. 344, Laws of 1840, redeemable, viz:		
4½ per ct. Jan. 1, 1864	$287,700 00	
5½ per ct. July 1, 1865	28,000 00	
		315,700 00
Amount issued to the Hudson and Berkshire Railroad company, per chap. 178, Laws of 1840, redeemable 1st July, 1865, 5½ per cent.		150,000 00
Am't unredeemed of the $3,000,000 issued to the New York and Erie Railroad company, due prior to September 30th, 1862, but which had not been presented		40,000 00
Amount issued on account of the deficiency in the General Fund Debt Sinking Fund, per chapter 216, Laws of 1848, redeemable as follows:		
5 per ct., May 1, 1868	$442,961 05	
6 per ct., Jan. 1, 1868	500,000 00	
7 per ct., July 1, 1870	700,000 00	
5 per ct., July 1, 1875	900,000 00	
6 per ct., July 1, 1878	800,000 00	

5 per ct., at pleasure	$348,107 00		
6 per ct., at pleasure	1,189,780 77		
		$4,880,848 82	
			$5,948,048 82
Comptroller's Bonds.			
5 per cent., issued per Revised Statutes, in 1844, for loans from the Railroad Sinking Funds, payable on demand		$28,697 94	
5½ per cent., issued per Revised Statutes, in 1842, for a loan to the treasury, payable on demand,		11,000 00	
6 per cent., issued per Rev. Statutes, for loans, in 1846, from the Railroad Sinking Funds, payable on demand		9,387 74	
6 per cent., issued per Rev. Statutes, in 1846, for a loan to the treasury of moneys held by the Comptroller, in trust for the Delaware academy, payable on demand		4,825 00	
6 per cent., issued per chap. 225, Laws of 1849, to discharge the claims of the Canal Fund upon the General Fund, redeemable 1st July, 1866		385,000 00	
6 per cent., issued per chap. 208, Laws of 1848, and chap. 37, Laws of 1850, for the benefit of the Stockbridge Indians		36,000 00	
			474,910 68
Indian Annuities.			
Amount of Indian annuities, payable to sundry Indian tribes under the several treaties with them, being $7,361.67, which would require an investment at 6 per cent. to produce that sum, of			122,694 87
			$6,545,654 37

Less, the payment of the stock provided for, due prior to 30th September, 1862	$40,000 00
	$6,505,654 37

Contingent State Debt.

Amount of State stock issued and loaned to the following railroad companies, viz:

Tonawanda, per chap. 200, Laws of 1840, redeemable July 1st, 1865, 5½ per cent.	$100,000 00
Tioga Coal, Iron Mining and Manufacturing Company, per chap. 296, Laws of 1840, redeemable July 1st, 1865, 5½ per cent.	70,000 00
Schenectady and Troy, per chap. 299, Laws of 1840, redeemable July 1st, 1867, 6 per cent.	100,000 00
Long Island, per chap. 193, Laws of 1840, redeemable Aug. 1st, 1861, 6 per cent., of which redemption is deferred to August, 1876, and the rate of interest changed to 5 per cent, per chap. 36, Laws of 1858	68,000 00
	$338,000 00

(D.)

STATEMENT *showing the increase and diminution of the capital of the Common School Fund during the year ending 30th September*, 1862.

	Bonds for lands.	Bonds for loans.	Loan of 1840.	Bank stock.	Comptroller's bonds.	State stock.	Money in the treasury.	Total.
Amount of the Fund 30th Sept., 1861...	$422,575 87	$408,469 71	$49,326 00	$50,000 00	$356,300 00	$1,135,057 24	$203,748 12	$2,625,476 94
Increase of the Fund, as stated below..	5,775 50	5,320 00	....	....	....	....	82,425 08	93,520 58
	$428,351 37	$413,789 71	$49,326 00	$50,000 00	$356,300 00	$1,135,057 24	$286,173 20	$2,718,997 52
Diminution of the Fund, as stated below,	16,187 64	38,042 10	....	....	....	....	6,651 36	60,881 10
Amount of the Fund 30th Sept., 1862...	$412,163 73	$375,747 61	$49,326 00	$50,000 00	$356,300 00	$1,135,057 24	$279,521 84	$2,658,116 42

INCREASE OF THE FUND.

Bonds for lands:		
Amount received for sales of lands..................	$4,605 50	
Amount transferred from the General Fund	1,170 00	
		$5,775 50
Bonds for loans:		
Amount received for loans to several towns......................		5,320 00
Money in the treasury:		
Amount received into the treasury, viz:		
Principal of bonds for lands	$16,187 64	
Principal of bonds for loans	38,042 10	
Sales of lands....................................	3,195 34	
Appropriation from income of the U. S. Dep. Fund....	25,000 00	82,425 08
		$93,520 58

DIMINUTION OF THE FUND.

Bonds for lands:		
Amount of principal paid into the treasury......................		$16,187 64
Bonds for loans:		
Amount of principal paid into the treasury......................		38,042 10
Money in the treasury:		
Amount paid out of the treasury, viz:		
For investment of capital.	$5,320 00	
For redemption of lands	111 44	
For surplus moneys on re-sale of lands..............	49 92	
	$5,481 36	
Amount transferred to the General Fund for bonds for lands..	1,170 00	6,651 36
		$60,881 10
Increase of the fund..		$32,639 48

(E.)

STATEMENT

Showing the amount of three and one-eighth mill tax, levied in 1861, on the valuations of real and personal estate in each county of this State, viz: for support of government seven-eighth mill; for the canals three-fourth mill; and for the public defense one and a half mill; also the expenses of collection and the net proceeds, and the amount of unpaid taxes returned to the Comptroller's office.

COUNTIES.	Amount of tax.	Co. Treasurers' fees.	Net proceeds.	Taxes returned.
Albany	$123,264 80	$1,231 43	$122,033 37	$121 43
Allegany	25,109 75	223 85	24,885 90	2,725 03
Broome	26,223 20	254 47	25,968 73	776 55
Cattaraugus	20,687 96	154 61	20,533 35	5,226 77
Cayuga	60,046 29	596 55	59,449 74	390 95
Chautauqua	44,594 07	440 79	44,153 28	515 54
Chemung	20,227 38	200 23	20,027 15	204 06
Chenango	32,812 50	327 79	32,484 71	33 07
Clinton	17,899 30	117 93	17,781 37	6,105 97
Columbia	57,391 97	573 92	56,818 05	....
Cortland	19,268 51	192 17	19,076 34	51 47
Delaware	25,657 35	255 49	25,401 86	108 16
Dutchess	93,685 25	936 85	92,748 40	....
Erie	147,662 00	1,476 62	146,185 38	....
Essex	11,950 08	50 03	11,900 05	6,946 72
Franklin	12,966 47	65 57	12,900 90	6,409 23
Fulton	12,670 04	107 29	12,562 75	1,940 65
Genesee	36,406 68	362 65	36,044 03	141 96
Greene	24,844 01	246 97	24,597 04	146 72
Hamilton	1,469 79	....	1,469 79	10,800 41
Herkimer	31,701 77	295 01	31,406 76	2,201 07
Jefferson	46,986 78	468 86	46,517 92	100 99
Kings	338,423 72	3,349 90	335,073 82	3,433 69
Lewis	14,047 50	121 91	13,925 59	1,856 60
Livingston	44,707 98	447 08	44,260 90	....
Madison	34,602 44	343 29	34,259 15	273 93
Monroe	83,537 74	835 28	82,702 46	9 88
Montgomery	22,981 49	229 81	22,751 68	....
New York	1,784,621 24	17,846 21	1,766,775 03	....
Niagara	40,074 44	383 98	39,690 46	1,676 73
Oneida	80,123 06	785 12	79,337 94	1,610 86
Onondaga	88,594 15	884 25	87,709 90	168 99
Ontario	51,392 42	513 58	50,878 84	34 78
Orange	76,641 42	766 42	75,875 00	....
Orleans	30,258 59	302 59	29,956 00	....
Oswego	44,544 90	399 69	44,145 21	4,575 68
Otsego	37,725 94	377 26	37,348 68	....
Putnam	19,106 36	191 06	18,915 30	....
Queens	66,697 13	662 38	66,034 75	459 09
Rensselaer	82,121 64	818 05	81,303 59	317 05
Richmond	27,276 26	272 76	27,003 50	....

E.—Continued.

COUNTIES.	Amount of tax.	Co. Treasurers' fees.	Net proceeds.	Taxes returned.
Rockland	$17,000 81	$170 01	$16,830 80	....
St. Lawrence	48,854 25	433 58	48,420 67	$5,495 88
Saratoga	37,651 11	372 23	37,278 88	428 48
Schenectady	17,508 71	175 08	17,333 63	....
Schoharie	21,408 38	214 01	21,194 37	7 01
Schuyler	13,377 26	133 77	13,243 49	....
Seneca	25,498 58	254 99	25,243 59	....
Steuben	43,724 16	427 80	43,296 36	943 86
Suffolk	37,657 83	376 58	37,281 25	32 36
Sullivan	12,915 61	118 45	12,797 16	1,070 70
Tioga	18,182 24	174 48	18,007 76	734 04
Tompkins	24,606 89	245 58	24,361 31	49 31
Ulster	48,648 93	486 49	48,162 44	....
Warren	7,873 06	60 75	7,812 31	1,797 78
Washington	47,909 70	477 02	47,432 68	207 89
Wayne	43,397 37	433 89	42,963 48	8 81
Westchester	131,289 77	1,312 90	129,976 87	....
Wyoming	24,221 32	242 21	23,979 11	....
Yates	22,792 84	227 93	22,564 91	....
Amount 3⅛ mill tax	$4,505,523 19	$34,447 45	$4,461,075 74	$70,140 15
Add ¾ mill, school tax	1,081,325 57			
Total 3⅞ mill tax	$5,586,848 76			

(F.)

Premises *bid in for the State under foreclosure of mortgage, belonging to the United States Deposit Fund, which remained unsold on the 30th September*, 1862.

County.	No. of mortgage.	When bid in.	Principal due.
Cattaraugus	21	1843	$275 00
Chemung	175	1857	256 00
Erie	353	1860	400 00
do	437	1860	500 00
Monroe	410	1855	1,800 00
do	413	1856	1,560 28
do	443	1856	900 00
Oswego	271	1841	300 00
do	346	1851	500 00
Queens	19 & 37	1852	850 00
Rensselaer	49	1846	348 00
do	203	1858	2,000 00
do	165	1858	500 00
do	181	1859	1,000 00
do	206	1860	250 00
Richmond	41	1861	2,000 00
Saratoga	116	1858	1,200 00
Ulster	229	1855	300 00

(G.)

ESTIMATED APPROPRIATIONS.

Required for the expenses of Government, and for other purposes, in pursuance of article 7, section 8, of the Constitution, and the existing laws, for the fiscal year commencing on the 1st October, 1863.

(In all cases where the Revised Statutes are referred to, see 5th edition.)

Payable from the General Fund.

Governor, for salary, R. S., vol. 1, page 505		$4,000 00
Judges of the Court of Appeals, for salaries, R. S., vol. 1, page 506		13,500 00
Justices of the Supreme Court, for salaries, R. S., vol. 1, page 506		113,500 00
Clerk of the Court of Appeals, for salary, R. S., vol. 1, page 506		2,000 00
Deputy Clerk of the Court of Appeals, for salary, chap. 277, Laws of 1847, page 314		1,500 00
State reporter, for salary, R. S., vol. 1, page 506		2,000 00
Attorney General, for salary, R. S., vol. 1, page 505		2,000 00
Deputy Attorney General, for salary, chap. 385, Laws of 1855		1,500 90
Secretary of State, for salary, R. S., vol. 1, page 505		2,500 00
Deputy Secretary of State, and Clerk of the Commissioners of the Land Office, for salary, R. S., vol. 1, page 505		1,500 00
Comptroller, for salary, R. S., vol. 1, page 505		2,500 00
Deputy Comptroller, for salary, R. S., vol. 1. page 505		2,000 00
Accountant and Transfer officer of the Comptroller's office, for salary, chap. 407, Laws of 1852		1,750 00
Treasurer, for salary, R. S., vol. 1, page 505	$1,500 00	
Treasurer, for compensation, per chap. 103, Laws of 1857	1,000 00	
		2,500 00

Deputy Treasurer, for salary, R. S., vol. 1, page 508		$1,500 00
Superintendent of Public Instruction, for salary, R. S., vol. 1, page 505		2,500 00
Deputy Superintendent of Public Instruction, for salary, R. S., vol. 1, page 505		1,500 00
Adjutant General, for salary, R. S., vol. 1, page 506		1,500 00
Deputy Adjutant General, for salary, R. S., vol. 1, page 506		1,000 00
Inspector General, for compensation and expenses, R. S., vol. 1, page 746		2,000 00
Commissary General, for salary, R. S., vol. 1, page 506		1,500 00
Private Secretary to the Governor, for salary, R. S., vol. 1, page 505		2,000 00
State Assessors, for compensation and traveling expenses, chap. 312, Laws of 1859		4,000 00
Superintendent of Weights and Measures, for salary, R. S., vol. 2, page 829		500 00
Inspectors of the State Prisons, viz: for salaries, R. S., vol. 1, page 506	$4,800 00	
Inspectors of State Prisons, for traveling expenses	1,200 00	
		6,000 00
Deputy State Engineer and Surveyor, for salary, R. S., vol. 1, page 506, (to be refunded by the several railroad companies)		2,000 00
For clerk hire, to assist the Deputy State Engineer in preparing railroad reports, (to be refunded by the several railroad companies)		1,500 00
For expenses of printing, &c., the railroad reports, (to be refunded by the several railroad companies)		3,500 00
Inspector of gas metres, for salary, chap. 116, Laws of 1860		2,500 00
Clerks and messenger in the Executive Department, chap. 64, Laws of 1858		2,600 00
Clerks in the Secretary's office, for salaries		7,000 00
Clerks in the Comptroller's office, for salaries		11,300 00
Clerks in the Treasurer's office, for salaries		3,400 00

Clerks in the Department of Public Instruction, for salaries		$2,000 00
Clerk and messenger in the Attorney General's office		1,050 00
Clerks in the State Engineer and Surveyor's office, for salaries		2,850 00
Clerks in the office of the Clerk of the Court of Appeals, for salaries		3,000 00
Clerk in the Adjutant Generals' office, for salary		900 00
Agent to examine auctioneers' accounts, for salary, chap. 399, Laws of 1849		800 00
Legislature, for pay of members and officers		90,000 00
For advances to the Clerks of the Senate and Assembly, for contingent expenses		15,000 00
For postage, expenses of committees, pay of witnesses, Legislative Manual, and other contingent expenses of the Legislature		16,000 00
For stationery for the public offices, chap. 313, Laws of 1848		3,500 00
For fuel for the Capitol, the State Hall, and the State Library, R. S., vol. 1, page 480		3,000 00
For furniture, books, binding, blanks, printing, and other necessary expenses of the public offices, viz:		
Secretary of State	$1,200 00	
Comptroller	1,200 00	
Superintendent of Public Instruction	1,000 00	
Clerk of the Court of Appeals	1,000 00	
Treasurer	500 00	
Attorney General	500 00	
State Engineer and Surveyor	500 00	
Adjutant General	1,000 00	
Inspector General	100 00	
		7,000 00
For postage of official letters, &c., of the Governor, Secretary of State, Comptroller, Treasurer, Superintendent of Public Instruction, Attorney General, State Engineer and Surveyor, Adjutant General, Inspector General, and Clerk of the Court of Appeals		3,200 00

For expenses of the Capitol, viz :		
Repairs, cleaning, labor, gas, and other necessary expenses	$8,000 00	
Superintendent, for salary	900 00	
		$8,900 00
For expenses of the State Hall, for repairs, cleaning, labor, gas, &c., and the superintendent's compensation		4,500 00
For expenses of the Regents of the University :		
Printing, stationery, postage, pay of messenger, &c.	$1,000 00	
Salary of the secretary	2,000 00	
		3,000 00
For expenses of the hall for the State Cabinet of Natural History and the Agricultural Museum :		
Repairs, cleaning, fuel, gas, superintendent's compensation, etc.	$2,200 00	
For increase, preservation, etc., of the State Cabinet of Natural History	800 00	
Curator, for salary	1,000 00	
		4,000 00
For expenses of the State Library :		
Purchase of books	$2,000 00	
Binding, lettering and marking books	1,200 00	
Repairs, cleaning, transportation of books, gas and other expenses,	750 00	
Salaries of the librarians	4,000 00	
International and State exchanges by the Regents of the University	400 00	
Janitor's compensation	500 00	
		8,850 00
For incidental expenses of government, R. S. vol. 1, page 509		750 00
For apprehension of criminals, R. S. vol 1, page 509		500 00
For apprehension of fugitives from justice, R. S. vol. 1, page 509		1,000 00
For rent and taxes of the house occupied by the Governor, R. S. vol. 1, page 509		3,500 00

For expenses of the Commissary's Department, R. S. vol. 1, page 511	$15,000 00
For salary of the Superintendent, clerk hire and contingent expenses of the Banking Department, chap. 164, Laws of 1851, and 103, of 1857	30,000 00
For salary of the superintendent, clerk hire, and contingent expenses, of the Insurance Department, chap. 366, Laws of 1859	10,000 00
For printing for the State, including binding, mapping, engraving, publication of the official canvass in the State paper, and in two newspapers in each Senate district, and other official notices, chap. 424, Laws of 1846, and 240 of 1847	100,000 00
Agricultural societies in the several counties and the State society, for the promotion of agriculture, chap. 299, Laws of 1848	8,000 00
For the salary of the entomologist of the State Agricultural Society	1,000 00
For the support and maintenance of the several State prisons, chap. 240, Laws of 1854	260,000 00
For pay of sheriffs, for the transportation of convicts to the prisons, chap. 123, Laws of 1849	16,000 00
For books for the use of the convicts in the State prisons, viz: Sing Sing, $300; Auburn, $200; Clinton, $100; and, for insane convicts, $50	650 00
For the support and expenses of the asylum for insane convicts, chap. 130, Laws of 1858	14,000 00
For pay of attorney of the Seneca Indians, chap. 150, Laws of 1845	150 00
For pay of attorney of the St. Regis Indians, chap. 325, Laws of 1861	150 00
For pay of the agent of the Onondaga Indians, chap. 376, Laws of 1851	100 00
For pay of the agent of the Onondaga Indians on the Allegany and Cattaraugus reservations, chap. 178, Laws of 1847	150 00
For expenses of removing intruders on Indian lands, chap. 204, Laws of 1821	100 00

For expenses of public lands, including the compensation of the Lieutenant Governor and the Speaker of the Assembly, for attendance as Commissioners of the Land Office	$2,000 00
For fees of county clerks	25 00
For fees of surrogates	25 00
For annuity of James Minor, chap. 200, Laws of 1815	60 00
For costs of suit, fees of sheriffs, pay of witnesses, and for expenses and disbursements by the Attorney General, Revised Statutes, vol. 3, page 556	2,500 00
For counsel employed to assist the Attorney General, Revised Statutes, vol. 1, page 489	2,000 00
For compensation of the Commissioners to examine the accounts of the Treasurer, and of the Canal and Banking Departments, chap. 221, Laws of 1862	1,500 00
For refunding money in cases of failure of title to lands sold by the State, Revised Statutes, vol. 1, page 541	300 00
Levi S. Backus, for furnishing the "Radii" to the deaf and dumb persons of this State, chap. 329, Laws of 1839	300 00
For furnishing reports of the Court of Appeals, and of the Supreme Court, to other States	250 00
For transportation of the Session Laws, Journals and documents of the Legislature, reports, books, &c., and packages per express, for the public offices, and for the expenses of boxes	4,000 00
For expenses of the Onondaga Salt Springs, chap. 229, Laws of 1843	40,000 00
For advances to county treasurers on account of non-resident taxes returned to the Comptroller's office	20,000 00
For refunding money to purchasers, for redemption of lands sold for taxes	15,000 00
For refunding money erroneously paid into the treasury on account of taxes	2,000 00
For refunding money paid into the treasury through mistake	500 00

Pay of sheriffs, for transmitting reports of convictions by the Courts of Special Sessions to the Secretary of State	$100	00
For compensation of the keeper of "Washington's Head Quarters"	100	00
For payment of moneys received into the treasury for taxes, for opening and improving roads	4,000	00
For relief of the Onondaga Indians, chap. 206, Laws of 1858	300	00
For expenses of books and stationery for the transfer office, at the Manhattan Company, New York	250	00
For interest on the debt created for the benefit of the Stockbridge Indians, chap. 208, Laws of 1848, and 37, of 1850	2,160	00
For interest on State stock issued on account of the Albany basin loan, chap. 200, Laws of 1849	9,629	28
For interest on the loan of $50,000, for extraordinary repairs and improvements of the canals, made per chap. 374, Laws of 1849	3,000	00
For interest on $200,000, Oswego canal loan, per chap. 501, Laws of 1851	12,000	00
For interest on $200,000, temporary loan to complete the canals	10,000	00
State Lunatic Asylum, for salaries of the officers, chap. 135, Laws of 1842	7,500	00
For the support of Mark Jack, an insane Indian, at the Lunatic Asylum	200	00
Institution for the Deaf and Dumb, New York, for support and instruction of 275 pupils	55,000	00
Institution for the Blind, New York, for support and instruction of 150 pupils	30,000	00
Society for the Reformation of Juvenile Delinquents, New York	24,000	00
House of Refuge, Western New York	25,000	00
Idiot Asylum	18,000	00

Payable from the General Fund Debt Sinking Fund.

For interest on $6,346,959.50 of the General Fund State Debt		$359,744 41
For payment of annuities to the following Indian tribes, viz:		
Onondagas	$2,430 00	
Cayugas	2,300 00	
Senecas	500 00	
St. Regis	2,131 67	
		7,361 67

Payable from the School Fund.

For dividends to common schools, R. S., vol. 1, page 538, including the salaries of the county school commissioners, chap. 179, Laws of 1856, sec. 12	155,000 00
For support of Indian schools, chap. 71, Laws of 1856	4,000 00
For refunding money paid into the treasury for redemption of lands sold for arrears of consideration, chap. 437, Laws of 1836	500 00
For refunding surplus moneys received on resales of lands	1,000 00
For expenses of lands	200 00

Payable from the Literature Fund.

For dividends to the academies, chapter 237, Laws of 1838	12,000 00
For the purchase of text-books, maps and globes, philosophical and chemical apparatus, for the academies, R. S., vol. 2, page 72	2,500 00

Payable from the United States Deposit Fund.

For dividends to common schools, chap. 237, Laws of 1838	165,000 00
For dividends to academies, chap. 237, Laws of 1838	28,000 00
For amount to be added to the capital of the School Fund, (article 9 of the Constitution)	25,000 00
For instruction of common school teachers in the academies designated by the Regents of the University, chap. 235, Laws of 1852	18,000 00

For the support of the Normal School........	$12,000 00
For refunding money erroneously paid into the treasury	500 00
For teachers' institutes in the several counties, chap. 361, Laws of 1847.................	8,000 00

Payable from the Bank Fund.

For interest on stock issued on account of the Bank Fund, chap. 114, Laws of 1845........	2,500 00
For redemption of bills, chap. 114, Laws of 1845	20 00
For contingent expenses, chap. 164, Laws of 1851	200 00

(H.)

CLERKS IN THE PUBLIC OFFICES.

Statement showing the amount paid for clerk hire in the public offices (except the Canal, Banking, and Insurance Departments), during the year ending on the 30th September, 1862, and the amount of their present salaries.

		Amount paid.	Present salaries.
GOVERNOR'S OFFICE.			
Present Clerks.			
C. D. Harvey		$1,000 00	$1,000 00
D. F. Tyler		865 58	1,000 00
Late Clerk.			
J. H. Linsley, 2 months		250 00	
		$2,115 58	$2,000 00
SECRETARY'S OFFICE.			
Present Clerks.			
Robert Bamber		$1,166 66	$1,250 00
D. Willers, Jr.		1,000 00	1,000 00
D. B. McNiel, Jr.		1,000 00	1,000 00
T. S. Gillett, 8 months		666 66	1,000 00
S. R. Harlow, 8 months		666 66	1,000 00
F. A. Reed, 8 months		604 17	1,000 00
H. W. Andrews, 8 months		562 50	750 00
Late Clerks.			
A. N. Wakefield, 4 months		416 68	
J. H. Burdick, 4 months		333 34	
J. Sharts, 4 months		333 34	
F. A. Hollister, 4 months		250 00	
		$7,000 01	$7,000 00
COMPTROLLER'S OFFICE.			
Present Clerks.			
Brace Millard	$1,241 66		
extra, prior to 1st January, 1862	124 46		
		$1,366 12	$1,300 00

		Amount paid.	Present salaries.
Henry Gallien	$1,041 65		
extra, prior to 1st January, 1862	124 45	$1,166 10	$1,100 00
Henry Evans	$958 33		
extra, prior to 1st January, 1862	124 45	1,082 78	1,000 00
H. B. Burr	$958 32		
extra, prior to 1st January, 1862	124 45	1,082 77	1,000 00
F. G. Fine	$958 32		
extra, prior to 1st January, 1862	124 45	1,082 77	1,000 00
F. Slosson, 7 months		583 33	1,000 00
W. H. Robinson, 7 months		525 00	900 00
C. D. Mattison, 7 months		525 00	900 00
J. Bronk, 8 months		600 00	900 00
J. T. Carroll, 6 months		450 00	900 00
Late Clerks.			
E. Sloan, 5 months	$375 00		
extra, prior to 1st January, 1862	124 45	499 45	
A. B. Wood, 5½ months	$412 50		
extra, prior to 1st January, 1862	18 33	430 83	
J. McMurdy, 6 months	$450 00		
extra, prior to 1st January, 1862	124 44	574 44	
A. Denniston, 4 months	$300 00		
extra, prior to 1st January, 1862	61 11	361 11	
H. R. Murray, 5 months	$283 33		
extra, prior to 1st January, 1862	124 44	407 77	

	Amount paid.	Present salaries.
M. S. Schermerhorn, temporary, 5 months	$416 67	
B. R. Hasbrouck, temporary	50 00	
	$11,204 14	$10,000 00

TREASURER'S OFFICE.

Present Clerks.		
G. A. Stannard	$1,200 00	$1,250 00
J. P. S. Briant, 8 months	716 66	1,250 00
A. P. Stevens, 3 do	250 00	
Late Clerks.		
L. C. Duempleman, 9 months	900 00	
J. Stringham, Jr., 4 months	333 34	
	$3,400 00	$2,500 00

DEPARTMENT OF PUBLIC INSTRUCTION.

Present Clerks.		
J. R. Clark	$1,000 00	$1,000 00
M. P. Cavert, 4 months	333 33	1,000 00
Late Clerks.		
John Atwood, 8 months	666 67	
E. R. Whiteside, temporary	50 00	
	$2,050 00	$2,000 00

ATTORNEY GENERAL'S OFFICE.

M. Hendrickson, Jr., clerk	$800 00	$800 00
A. G. Courtney, messenger, 8 months	166 66	250 00
D. B. Stacy, do 7 do	145 84	
	$1.112 50	$1,050 00

STATE ENGINEER AND SURVEYOR'S OFFICE.

Present Clerks.		
B. S. Van Rensselaer	$1,600 00	$1,500 00
R. J. Cantwell, 4 months	450 00	1,350 00

	Amount paid.	Present salaries.
Late Clerk.		
J. W. Smith	$1,000 00	
	$3,050 00	$2,8500
ADJUTANT GENERAL'S OFFICE.		
C. E. Huxley	$900 00	$900 00
OFFICE OF THE CLERK OF THE COURT OF APPEALS.		
L. Van Der Kar	$1,200 00	$1,200 00
W. H. Young	1,000 00	1,000 00
J. M. Whelpley	800 00	800 00
E. T. Hughes	500 00	500 00
	$3,500 00	$3,500 00

(I.)

STATEMENT

Of the duties paid by the several Auctioneers of this State during the last fiscal year.

Albany,	Alexander Kennedy	$41	24
do	John S. Dickerman	1	53
do	Alanson Lewis	6	30
Brooklyn,	William Cole	2	09
do	John K. Oakley	6	95
do	Mark Wray	1	77
Buffalo,	Edwin R. Lyon		97
do	James P. Shoecraft	14	70
Lockport,	Alfred Day	2	37
New York city,	John H. Austen	936	01
do	William Abbott	8	99
do	John S. H. Bartlett	62	99
do	John S. Betts	295	23
do	Daniel H. Burdett	315	09
do	A. M. Christalar	22	07
do	Edward L. Corlies	4,925	03
do	George Cook	22	61
do	Henry G. Evans	12	31
do	William H. Franklin	3	02
do	Francis Fizsimmons		44
do	Thomas Gaffney	5	12
do	George G. Haydock	330	76
do	L. M. Hoffman	5,072	65
do	Henry L. Hoquet	11,371	96
do	R. T. Hazell	211	86

Carried forward

Brought forward		
do	Lionel Jacobs	1 40
do	Michael Kerrigan	20
do	Henry L. Leeds	126 43
do	E. H. Ludlow	145 18
do	Daniel D. Lockwood	1,001 53
do	A. M. Merwin	96 82
New York city,	Thomas I. Miller	24 25
do	Thomas R. Minturn	434 89
do	William S. Mount	24,334 24
do	Henry D. Miner	30 98
do	A. P. Montant	6,456 61
do	Walden Pell	1,669 16
do	Charles Parkhurst	3 93
do	F. J. Parker	2,389 96
do	Edward Pettinger	4 57
do	Edward Schenck	31 45
do	Hewlett Scudder	1,329 36
do	Hugh Scanlan	20
do	Charles B. Spicer	8,714 58
do	Jacob Sterman	2 71
do	William W. Shirley	15 10
do	Edgar C. Suydam	12 87
do	Edward Sintzenick	10 61
do	John P. Traver	2 12
do	William L. Van Zandt	12 09
do	P. S. Van Houton	24 19
do	Richard Walters	2 65
do	Edward J. Warren	4,210 59
do	William Witters	7 98
do	William Walf	3 74
do	William Yellott	1,713 96
Oswego,	Hiram Allen	1 06
Penn Yan,	Freeman M. Burritt	76
Poughkeepsie,	Hiram Haight	12 64
do	Isaac McKay	72
Rochester,	Alonzo K. Amsden	1 05
do	Edwin Scranton	12 00
Syracuse,	Edwin R. Pendergast	3 21
Carried forward		

Brought forward		
Troy,	William Allendorph	1 17
do	William E. Marston	3 31
Utica,	Benjamin F. Brooks	8 75
Watertown,	J. P. Powers	2 72
do	A. M. Utley	07
Waterloo,	David A. Vanderburgh	17
		$76,536 04

(K.)

Superintendent's Office,
Syracuse, *Oct.* 22*d*, 1862.

Sir: In compliance with section 13, chap. 246, of the act of 1859, I have the honor to transmit the following statement of receipts and expenditures at this office for the fiscal year ending Sept. 30th, 1862.

The amount of revenue accruing for said year, as follows:

From duties on salt	$81,088 43
From rents, penalties, etc.	101 00
	$81,189 43
Expenditures for the support of the salt springs during the same period	40,278 76
Surplus revenue	$40,910 67

I estimate the production of salt during the ensuing fiscal year to be likely to reach the amount of 10,000,000 of bushels, the duties upon which, at the rate of one cent per bushel, will be $100,000.

The expenses for the support of the salt springs, should certain further improvements and extensions, now become necessary, be undertaken, would be about $60,000. This rate of expenditure would only be requisite for two or three years to put the works in a situation to manufacture 15,000,000 of bushels of salt. But should it not be deemed advisable to provide for a production to exceed the present amount of nine or ten millions of bushels, the sum of forty-five to fifty thousand will be sufficient to defray all expenses.

All of which is respectfully submitted,

V. W. SMITH, *Supt. Onondaga Salt Springs.*

Hon. Lucius Robinson, *Comptroller.*

(L.)

Cost of Stationery delivered to the public officers for the year ending September 30th, 1862.

Attorney General's office	$119 06
Adjutant General's office	316 43
Canal Department	20 25
Court of Appeals	265 73
Comptroller's office	253 16
Canal Appraisers	66 81
Colonial History	3 42
Insurance Department	17
Superintendent of Public Instruction	75 42
Secretary of State	314 94
State Engineer and Surveyor	110 67
State Treasurer	138 21
Surgeon General	6 96
	$1,691 23

(M.)

STATEMENT

Showing the valuations of real and personal estate in the several counties of this State, as returned to the Comptroller's office, for the year 1862; *also the number of acres of land assessed in each county.*

COUNTIES.	Acres of land as per Burr's Atlas	Acres of land ass'd.	Assessed value of real estate.	Assessed value of personal estate.	Corrected aggregate valuations.
Albany*	325,590	¶308,148	$31,394,134	$6,862,921	$39,875,784
Allegany	‖758,380	641,143	7,217,741	832,881	8,050,622
Broome	401,404	432,010	6,422,529	862,832	7,285,361
Cattaraugus	788,306	801,302	6,319,623	503,194	7,379,087
Cayuga*	414,678	416,045	15,234,595	3,418,399	18,652,994
Chautauque	650,620	650,613	12,424,736	1,827,257	14,251,993
Chemung	‡346,000	247,821	6,016,019	967,980	6,983,999
Chenango*	514,800	543,910	9,111,955	1,606,301	10,718,256
Clinton	596,800	611,327	5,063,682	625,323	5,689,005
Columbia	399,500	383,294	13,386,290	4,556,557	14,864,886
Cortland	320,000	309,502	4,866,767	719,146	5,585,913
Delaware*	933,500	877,593	7,421,977	1,192,460	8,194,252
Dutchess	489,700	484,818	20,927,704	8,145,698	33,857,364
Erie	536,700	¶612,846	36,111,161	7,154,100	43,265,261
Essex	1,138,500	1,002,590	3,679,273	464,640	4,148,858
Franklin	977,388	1,001,920	4,173,836	414,947	4,588,783
Fulton*	320,500	313,162	3,451,202	539,760	3,990,962
Genesee	‖625,280	309,804	10,973,269	1,934,530	12,897,931
Greene	272,933	384,816	5,510,377	1,256,101	6,766,478
Hamilton	680,866	784,048	877,317	2,200	880,517
Herkimer*	877,000	653,728	7,866,381	1,935,862	9,802,303
Jefferson	720,574	733,089	12,350,686	2,682,060	15,032,746
Kings	48,800	¶18,917	99,233,971	12,147,604	111,381,575
Lewis*	718,265	731,651	3,581,769	592,074	4,173,900
Livingston	326,000	383,032	11,738,108	2,238,715	13,976,823
Madison	372,000	388,908	9,071,769	2,329,550	11,401,319
Monroe	388,900	¶392,702	21,704,900	4,493,279	26,228,182
Montgomery*	221,000	231,450	6,098,176	659,631	8,493,776
New York	13,920	13,920	399,556,404	172,416,031	571,972,435
Niagara	308,662	305,981	14,416,629	1,656,217	16,072,846
Oneida*	704,740	735,612	13,432,035	3,067,196	16,498,841
Onondaga	455,100	461,620	22,599,949	3,648,738	26,248,687
Ontario	395,107	391,882	13,863,561	3,181,263	17,044,824
Orange	486,500	479,104	19,599,607	6,505,103	26,104,710
Orleans	238,154	237,254	8,157,781	1,138,422	9,296,203
Oswego*	580,978	¶462,399	12,013,716	1,834,240	14,064,576
Otsego	570,900	610,197	9,476,087	2,124,192	11,600,545
Putnam	138,300	131,183	4,017,819	1,163,365	5,181,184
Queens	253,100	179,449	16,131,320	5,380,480	21,511,800
Rensselaer*	400,700	¶390,867	19,063,031	7,258,439	26,321,470
Richmond	40,300	20,293	5,912,944	763,375	6,676,819
Rockland	110,500	102,411	4,784,016	1,225,625	5,973,641
Saratoga*	511,000	509,390	8,862,388	2,838,748	12,011,191
Schenectady*	125,000	¶122,575	4,941,021	805,794	5,746,815
Schoharie	398,200	374,174	5,186,626	933,170	6,119,809

Google

M.—Continued.

COUNTIES.	Acres of land as per Burr's Atlas	Acres of land ass'd.	Assessed value of real estate.	Assessed value of personal estate.	Corrected aggregate valuations.
Seneca	197,550	197,614	$8,981,937	$1,541,503	$10,523,440
Schuyler	†	201,689	4,015,299	420,271	4,435,570
Steuben*	‡897,000	835,000	12,126,697	2,253,921	14,380,618
St. Lawrence	1,738,500	1,661,371	14,276,417	1,495,310	15,771,727
Suffolk	626,000	415,699	8,831,007	2,116,680	10,947,687
Sullivan	587,000	578,620	3,509,343	414,325	3,925,243
Tioga	313,500	310,950	5,094,188	942,397	6,036,585
Tompkins	371,500	292,501	5,718,652	1,316,115	7,185,089
Ulster	701,500	665,743	11,466,597	2,487,161	13,953,759
Warren*	583,500	488,929	2,151,073	423,000	2,574,073
Wayne	375,576	356,321	12,174,064	1,863,675	14,047,426
Washington	516,500	499,073	12,911,673	3,246,465	16,158,138
Westchester*	290,527	280,193	34,399,592	6,850,937	*41,250,529
Wyoming	§	368,000	7,434,578	866,817	8,301,395
Yates	204,444	206,643	6,443,354	966,057	7,409,411
	28,297,142	27,546,846	$1,113,779,352	$314,111,034	$1,433,766,016

* No returns received from these counties, therefore taken from previous statements.

† Included in Chemung, Steuben and Tompkins.

‡ Includes part of Schuyler.

§ Included in Genesee and Allegany.

‖ Includes part of Wyoming.

¶ Exclusive of cities.

(N.)

STATEMENT

Showing the amount af Town, County, School and State taxes, and the rate of taxation on each dollar of the aggregate valuations for the year 1862; *and the aggregate valuations of the real and personal estate in the several counties of this State, as equalized by the Board of Equalization, according to the valuations as returned to the Comptroller's office, for the year* 1861. (*For the valuations of* 1862, *see Statement* M)

COUNTIES.	Aggregate valuations.	Town taxes.	County taxes.	School tax.	State tax.	Aggregate taxation.	Rate of tax on $1 valuation, in mills.
Albany*	$39,354,490	$263,581 79	$104,167 70	$29,515 88	$157,417 96	$554,683 33	14.1
Allegany	9,269,046	54,972 66	15,859 69	6,951 78	36,076 18	113,860 31	12.3
Broome	9,012,963	6,100 51	25,293 00	6,759 72	36,051 85	74,205 08	8.2
Cattaraugus	8,574,454	23,991 59	7,766 90	6,430 84	34,297 82	72,487 15	8.5
Cayuga*	21,942,079	10,317 64	38,490 63	16,856 55	87,768 32	153,433 14	7.0
Chautauqua	14,208,799	22,452 02	25,697 95	10,656 60	56,835 19	115,641 76	8.1
Chemung	7,078,341	7,427 74	22,077 88	5,308 76	28,313 36	63,127 74	8.9
Chenango*	10,412,793	16,136 53	21,200 65	7,809 59	41,651 17	86,797 94	8.3
Clinton	5,929,031	26,183 00	12,323 71	4,446 77	23,716 12	66,669 60	11.0
Columbia	21,714,722	26,641 57	34,642 78	16.286 04	86,858 89	164,429 28	7.6
Cortland	6,541,188	8,727 85	14,573 82	4,905 82	26,164 75	54,372 24	8.0
Delaware*	7,826,163	15,043 97	8,917 06	5,869 62	31,304 65	61,135 30	7.9
Dutchess	33,857,806	23,782 71	50,330 56	25,393 35	135,431 22	234,937 84	6.9
Erie	46,538,000	60,421 76	103,062 28	34,903 50	186,152 00	384,539 54	8.3
Essex	3,348,442	20,439 04	8,706 93	2,511 33	13,393 77	45,051 07	13.4
Franklin	4,195,271	11,994 02	7,468 46	3,146 45	16,781 08	39,390 01	9.4
Fulton*	4,152,490	8,481 12	18,145 41	3,114 37	16,609 96	46,350 86	11.2
Genesee	13,075,604	15,762 79	9,502 44	9,806 70	52,302 42	87,374 35	6.7
Greene	8,240,459	12,779 81	18,574 36	6,180 34	32,961 84	70,496 35	8.5
Hamilton	630,266	5,563 00	2,917 71	472 70	2,521 06	11,474 47	18.2
Herkimer*	11,144,484	17,061 02	43,325 00	8,358 36	44,577 94	113,322 32	10.2
Jefferson	16,566,882	27,985 49	41,987 55	12,425 16	66,267 52	148,665 72	8.9
Kings	93,231,884	888,017 99	465,301 06	69,923 91	372,927 54	1,796,170 50	19.3
Lewis*	5,279,275	15,962 14	9,867 00	3,959 46	21,117 10	50,905 70	9.6

Livingston	18,357,339	16,905 14	31,093 33	13,768 00	73,429 36	135,195 83	7.4
Madison	13,281,535	8,971 85	27,167 08	9,211 15	53,126 14	98,476 22	7.4
Monroe	29,607,232	74,130 67	114,653 68	22.205 42	118,428 93	329,418 70	11.1
Montgomery*	9,442,013	14,412 00	47,473 53	7,081 51	37,768 05	106,735 09	11.3
New York	549,624,306	†	7,693,340 76	412,218 23	2,198,497 22	10,304,056 21	18.1
Niagara	15,414,219	12,708 18	26,344 40	11,560 66	61,656 85	112.270 09	7.3
Oneida*	24,709,962	67,644 20	62,225 93	18,532 40	98,839 85	247,242 38	10.0
Onondaga	26,301,687	60,299 95	36,191 64	19,726 27	105,206 73	221,424 59	8.5
Ontario	19,768,497	16,386 69	37,115 00	14,826 37	79,073 99	147,402 05	7.5
Orange	25,855,071	27,311 15	38,000 00	19,391 30	103,420 28	188,122 73	7.3
Orleans	10,764,583	8,671 37	21,775 45	8,073 44	43,058 33	81,578 59	7.6
Oswego*	12,226,322	42,943 77	33,922 85	9,169 74	48,905 29	134,941 65	11.0
Otsego	12,407,330	20,347 22	11,960 05	9,305 50	49,629 32	91,242 09	7.4
Putnam	5,272,968	6,684 68	7,592 54	3,954 73	21,091 87	39,323 82	7.5
Queens	21,178,286	160,158 44	19,865 54	15,883 71	84,713 14	280,620 83	13.2
Rensselaer*	31,153,496	54,288 11	60,591 76	23,365 12	124,613 98	262,858 97	8.4
Richmond	5,727,740	26,847 19	53,780 17	4,295 82	22,910 96	107,834 14	18.8
Rockland	6,028,034	9,599 42	4,394 37	4,521 02	24,112 14	42,626 95	7.1
Saratoga*	12,345,230	26,062 71	30,757 36	9,258 92	49,380 92	115,459 91	9.3
Schenectady*	7,126,992	33,240 67	10,522 66	5,345 24	28,507 97	77,616 54	10.9
Schoharie	7,055,559	15,391 68	11,925 06	5,291 67	28,222 23	60,830 64	8.6
Seneca	10,875,074	9,001 02	17,489 69	8,156 30	43,500 30	78,147 31	7.2
Schuyler	5,507,289	11,670 67	8,580 99	4,130 47	22,029 16	46,411 29	8.4
Steuben*	12,932,122	34,189 54	33,548 22	9,699 09	51,728 49	129,165 34	9.9
St. Lawrence	15,052,841	43,232 69	31,505 12	10,539 63	60,211 36	145,488 80	9.7
Suffolk	8,548,972	22,192 98	13,684 60	6,411 73	34,195 89	76,485 20	8.9
Sullivan	4,757,745	13,427 04	12,035 76	3,568 31	19,030 98	48,062 09	10.1
Tioga	7,285,346	19,084 58	22.802 49	5,464 01	29,141 38	76,492 46	10.5
Tompkins	8,715,849	12,981 69	14,417 74	6,536 89	34,863 39	68,799 71	7.9
Ulster	14,834,426	71,283 85	50,175 90	11,125 82	59,337 70	191,923 27	12.9
Warren*	2,143,459	5,763 93	12,502 56	1,607 59	8,573 84	28,447 92	13.2
Wayne	16,536,115	46,579 37	23,494 25	12,402 09	66,144 46	148,620 17	8.9
Washington	16,431,774	12,962 86	20,197 67	12,323 83	65,727 09	111,211 45	6.8
Westchester*	41,185,997	82,657 18	59,096 35	30,889 50	164,743 99	337,387 02	8.2
Wyoming	10,229,568	13,265 03	10,162 98	7,672 17	40,918 27	72,018 45	7.0
Yates	8,494,038	13,701 98	46,679 38	6,370 53	33,976 15	100,728 04	11.8
	$1,449,303,948	$2,704,827 26	$9,867,267 39	$1,086,977 96	$5,797,215 79	$19,456,288 40	13.43

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* No returns received from these counties, therefore the town and county taxes are stated the same as in 1861.

† City covers the whole county, and is included in county taxes.

(O.)

STATE OF NEW YORK:
COMPTROLLER'S OFFICE,
ALBANY, *October* 13, 1862.

Hon. GEO. S. BOUTWELL,
Commissioner of Internal Revenue, Washington:

SIR—Being required by law, as Comptroller of this State, to superintend and manage its finances, my attention has been called to a brief note addressed by you to the Treasurer, on the 8th inst. Speaking of the use of stamps on checks, drafts, and other instruments, you say that you "know of no exceptions under the provisions of the law in favor of officers of States, whether acting in their official capacity, or as private individuals."

I am aware of the great labor imposed upon you by the tax law, and regret to add anything to it; but you will readily perceive that the principle here involved is one of vital importance to the States, and if you can find time to consider it, I think you will admit that the inference which seems to flow from the language of your note, is not authorized either by the law or the Constitution.

The money received and paid out by the officers in question, is the money of the State; it is received and paid out by the State; the stamps, if used, must be paid for from the State Treasury. It is true, that no exceptions are made in terms by the law in favor of those officers; but is it thence to be inferred that Congress intended to embrace States in the words "persons" and "parties," and to impose taxes upon State Governments, and subject them to penalties for non-payment? If any such extraordinary assumption of power had been intended, would it not have been distinctly expressed instead of being left to vague inference?

And whether expressed or not, will it be held that Congress has any power under the Constitution to take money from the State Treasuries by taxation? The States have certainly reserved to themselves the right to collect money to pay their own expenses. Has the Federal Government any right to take it away from them? If they have the right to collect it, have they not also the right to keep and apply it to the purposes for which it was collected? Have they left their very existence at the mercy of the Federal Government? If the stamp tax applies to them, so, by the same authority, does the income tax, and the latter would take from the Treasury of this State about $750,000. If this may be taken, so may the whole be taken, and the State Government left without any means of paying its expenses, and its existence thus virtually terminated.

As the tax law does not in terms *include* States, it appears to me that the only reason why they were not in terms *excluded*, was because it was deemed unnecessary, so clear is it that Congress had no power to tax their Treasuries, and has not assumed to exercise it. I may add that the Attorney General, Mr. Dickinson, an able jurist and eminent statesman, to whom the case has been stated, as well as the Governor and all the other State officers connected with the management of our finances, fully concur in this opinion.

If you can find time to consider the matter and give me an early reply, you will greatly oblige me.

I have the honor to be,
Very respectfully,
Your obedient servant,
L. ROBINSON, *Comptroller.*

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ANNUAL REPORT

OF THE

CANAL COMMISSIONERS

OF THE

STATE OF NEW YORK.

TRANSMITTED TO THE LEGISLATURE JANUARY 8, 1863.

ALBANY:
COMSTOCK & CASSIDY, PRINTERS.
1863.

No. 6.

IN ASSEMBLY,

January 8, 1863.

ANNUAL REPORT
OF THE CANAL COMMISSIONERS.

STATE OF NEW YORK:
Canal Commissioners' Office,
Albany, *December* 31*st*, 1862.

To the Honorable the Legislature of the State of New York:

The undersigned herewith transmit their respective reports, as Canal Commissioners, for the year 1862.

Very respectfully,
W. I. SKINNER,
W. W. WRIGHT,
F. A. ALBERGER,
Canal Commissioners.

REPORT.

STATE OF NEW YORK:
CANAL COMMISSIONERS' OFFICE,
ALBANY, *November* 1, 1862.

To the Honorable the Legislature of the State of New York:

Pursuant to the provisions contained in the Revised Statutes, the Canal Commissioners submit their

ANNUAL REPORT.

The Board of Canal Commissioners, on the first day of January, 1862, consisted of William I. Skinner, whose term of office expires December 31, 1862; William W. Wright, whose term of office expires December 31, 1863; and Franklin A. Alberger, whose term expires December 31, 1864.

The Board was organized at their office on the fifteenth day of January, by the election of William I. Skinner as President, and William W. Wright as Secretary.

To William I. Skinner was assigned, in special charge, the Eastern division of the canals, which is made up as follows:

	Miles.
Erie canal, from Albany to the east bank of the Oneida Lake canal	136
Champlain canal	66
Glens Falls feeder	12
Pond above Troy dam	3
Black River canal, and Black River improvement	98
	315

To William W. Wright was assigned, in special charge, the Middle division of the canals, which embraces the following:

	Miles.
Erie canal, from the east bank of the Oneida Lake canal to the county line between Seneca and Wayne counties, including the several feeders and reservoirs	76
Chenango canal, feeders and reservoirs	97
Oswego canal	38
Oneida Lake canal	7
Oneida River improvement	20
Seneca River towing-path	$5\frac{3}{4}$
Cayuga and Seneca canal	23
Cayuga inlet	2
Crooked Lake canal	8
Chemung canal	23
Chemung canal feeder	16
Seneca River improvement	$12\frac{1}{4}$
	329

To Franklin A. Alberger was assigned, in special charge, the Western division of the canals, which embraces the following:

	Miles.
Erie canal, from the county line between Seneca and Wayne counties, to Buffalo, including the Main and Hamburg street canal, slips, and basins at the latter place	155
Genesee Valley canal	118
Extension of Genesee Valley canal	7
	280
Total authorized canals	924

EASTERN DIVISION.

CANAL REPAIRS.

ERIE CANAL.

The Eastern division of the Erie canal, commencing with the south end of the Albany basin, extending to the east bank of the Oneida Lake canal at Higginsville, including that part of the Champlain canal beginning at its junction with the Erie canal at the foot of the guard lock at Mohawk river; also, including all feeders, dams, side-cuts and structures connected therewith, is divided into five superintendent or repair sections: The first three of which, eighty-eight miles in length, have been under the supervision of Robert C. Dorn, as superintendent of canal repairs, and the remaining sections, two in number, fifty-four miles in length, under the supervision of John Beardslee, as superintendent of canal repairs.

SECTION No. 1—*Robert C. Dorn, Superintendent.*

This section extends from the south end of the Albany basin, to the west end of the lower Mohawk aqueduct, and includes the Port Schuyler and West Troy side-cuts, the Champlain canal from the junction to the Mohawk river, the Troy dam, sloop lock, and the pond above, making a total length of nineteen miles.

The structures upon this section are:

46 locks, including two weigh locks,
182 lock gates,
20 culverts,
10 road bridges, (wood,)
11 do (iron,)
11 farm bridges, (wood,)
2 towing path bridges, (wood,)
1 aqueduct,
6 waste weirs,
1 work shop, and two timber sheds.

The repairs of this section are contracted to Charles T. Baldwin for the term of three years, from March 4, 1860, at the sum of $28,440 per annum. His contract expires March 4th next.

New Structures.—In pursuance of chapter 119, Laws of 1860, a bridge of iron superstructure has been built over the canal at Van Vliet street, in the village of Cohoes, at an expense to the State of $3,000. A new wooden bridge was built at Fonda's farm crossing, and a foot bridge which had been used temporarily to supply the place of a fallen bridge on Ferry street, West Troy, was moved to Utica street, where it still remains.

Under a resolution of the Canal Board, snubbing posts have been set about eight hundred feet distant from each other the entire length of the section; they cost $327.37.

Repairs to structures.—The piers of the lower Mohawk aqueduct have been extensively repaired. They were retimbered and planked anew. The repairs to the locks have been considerable. Nine new lock gates, several mitre sills, and quite a number of new paddles, heel and toe posts and balance beams have been put in, and other structures have received the needed repair.

The change bridge at the lower Mohawk aqueduct, for purposes of convenience, was moved, in pursuance of a resolution of the Canal Board; it cost $1,206.

Structures requiring repairs.—The lock gates upon this section of the canal require considerable repair, and many of them should be replaced. Many of the mitre sills must be renewed, and the valves in nearly all the locks should be new next spring.

The Troy dam is considerably out of repair, and to insure sufficient depth of water the whole season, should be raised in some places at least fifteen inches, and be extensively repaired.

These, with the necessary repairs to the docking, slope wall and bridges, will put this section in good working order.

During the season of navigation, a number of men have been employed at Albany, West Troy, and at the Sixteen Locks, to assist boats navigating the canal. These forces and the night patrol or police have been maintained at an expense of $4,600.

Amount expended by superintendent of repairs	$11,639 98
do paid repair contractor..............	29,240 00
Total for the year................	$40,879 98

Detailed Statement of Expenditures by the Superintendent of Repairs, Section No. 1.

Structures or Works.	Whole number	Cost of new structures.	Cost of repairs old structures.	Total.
Locks	44		$53 91	$53 91
Weigh locks	2		24 08	24 08
Lock gates	182			
Aqueducts	1		2,900 00	2,900 00
Waste weirs	6			
Culverts	20			
Farm bridges	11	$520 68	185 00	705 68
Road " (wood)	10	303 13		303 13
" " (iron)	11			
Towpath bridges	2		100 00	100 00
Breaking ice and assisting boats in the ice			791 00	791 00
Assisting navigation at Albany, West Troy and Sixteen Locks			4,600 00	4,600 00
Miscellaneous expenditures			1,650 48	1,650 48
Add ⅓ Supt. salary				333 33
Add ⅓ Clerk hire				180 00
Total				$11,639 98

The business of the city of Albany upon the canals has increased to such an extent as to demand greater conveniences on the level between locks 1 and 2. The canal at this point was enlarged prior to 1842, upon the then approved plan of a slope wall resting upon a bench of earth. The bench and slope wall extend so far into the canal that a loaded boat cannot approach nearer than about eighteen feet of the top line of the bank, and where a boat is unloading upon each side it is almost impossible for another to pass. An abundance of room might be made by taking out both slope wall and bench, and building either a slope or vertical wall to canal bottom. The distance between the two locks is about seventy-two chains. I would recommend the removal of the bench and slope wall, and the construction of a vertical wall from lock No. 1, thirty-six chains west, one-half of the distance, and of a slope wall to bottom for the remaining distance. The cost of such a work would be about $30,000.

I would also recommend the construction of a new lock in place of the old and abandoned lock at lock No. 2. There has been but one lock in use here for a number of years, and that is a large and improved lock. The rebuilding of the lock would give the same capacity to the canal from Albany to Troy as the canal has at other points. A lock constructed on the present enlarged plan would cost about twenty-five thousand dollars.

The construction of a second lock at this point, a short distance above the extensive lumber yards near Albany, was adopted as a part of the plan of the enlargement under the amended 3d section of the 7th article of the Constitution, and considerable progress was made by the contractor in preparing the stone and materials for the lock. The work was not urged forward owing to the want of funds, and the necessary use of the limited means at other and more pressing points. The work was finally abandoned, and the materials were used in constructing an enlarged lock on the Champlain canal. The increased business of the canals since 1859, and especially the transportation of lumber to the yards below, seems to render the construction of the second lock extremely needful to accommodate this large and increasing transportation.

Frequent delays in navigation arise from the grounding of loaded boats upon the slope wall and bench of the canal through the village of West Troy, and the consequent wedges and jams occasioned by it. This section of the canal was completed on the old plan of a slope wall resting on a bench of earth, which together project into the canal some ten or twelve feet. More boats pass over this portion of the canal than over any other. The Champlain and Erie boats both pass over it. If the slope wall and bench were removed, and a vertical wall put in, four boats (instead of three as now) might pass abreast, and the almost constant crowding and wedging at that place be avoided.

An estimate has been made of the cost of such an improvement for the required distance, 154 chains; it would cost nearly $50,000. It is a work which is warranted by and necessary to the present business of the canals, and I would earnestly recommend an appropriation therefor.

The increased business upon the canals also demands that the single locks at the West Troy side-cut should be doubled, so boats may be locked into the river as fast as they are locked upon the levels from the double locks above.

The bridge superstructure on Broad street, West Troy, leading over the upper side-cut, is built one-half of iron and one-half of wood. The wooden part is much out of repair, is unsafe, and should be rebuilt, so as to correspond with the other part. The estimated cost of such an improvement is $3,205.68, and as it is not included in the repair contract, provision must be made in some other way for it. It should be finished before navigation in the spring.

SECTION No. 2—*Robert C. Dorn, Superintendent.*

This section extends from the west end of the lower Mohawk aqueduct to the head of lock No. 27, and is thirty-two miles in length.

The structures on this section are:

18 locks—1 guard lock,
1 work shop and timber shed,
1 dam,
19 culverts,
6 lock houses,
20 road bridges, (wood,)
3 road bridges, (iron,)
3 aqueducts,
2 waste weirs,
16 farm bridges,
1 towing-path bridge.

The contract for the repairs of this section was let, March 4th, 1860, to William McClary, for the sum of $9,700 per annum, for the term of three years. It expires March 4th, 1863.

New structures.—Two bridges, one near Philip's lock, and one near Vedder's, have been built by the repair contractor. A slope wall with cement filling has been constructed at the breach of 1859, on the berm and tow-path sides of the four mile level, at an expense of $2,003.89. The embankment was considered dangerous on account of its height and proximity to the river.

Agreeable to a resolution of the Canal Board, snubbing posts have been set along the entire section, at a cost of $526.50. Several lock gates have been built to be used as needed—they cost $839.79.

Repairs to old structures.—In the fall of 1859, the arch culvert on section No. 30, was torn out by a breach in the canal. It has been rebuilt during the past season,is a work very much needed, and cost $3,179.10.

The contract for the removal of the big bevels on this section, was this year completed. Their removal increases the capacity of the locks considerably. The work cost $1,787.50.

The timber sheds at Rexford Flats, has been repaired at a cost of $213.24.

It was feared that the bottom of lock No. 20 would fail; an additional course of planking was therefore put down, and the lock made safe. It cost $256.88.

The benches near the breach on the four mile level were taken out, and the bottom of the canal was concreted; this cost $1,105.02. The bank of the canal, near Flint hill, has from time to time been sliding, and was considered dangerous; it has been protected by piles, at at expense of $454.06.

Structures requiring repairs.—The lock gates, valves and other fixtures upon this section, must in many instances be renewed, and the wooden structures at nearly every lock need general repairs. The bridges at Fonda's aqueduct, Marcellus' and John Kline's, should be rebuilt, and those at Crescent, and at the ferry near Schenectady repaired, and the towing path bridge at Rexford's Flats, near the feeder, should be raised and repaired.

About five hundred feet of docking is needed on the short level at Rexford's Flats, and the plank and docking through Schenectady, for about two miles, should be relaid.

The towing-path on the short level, and on the feeder, ought to be raised.

The main dam at the upper Mohawk aqueduct, running obliquely across the river, and being built of loose stone, affords but an imperfect resistance to the current, and is consequently damaged by every considerable rise in the river, and is at all times liable to get out of repair, very leaky and expensive in its maintenance. In the dry parts of the year it often fails to furnish sufficient water for the purposes of navigation, though there is more than sufficient running through it.

A permanent stone dam should be built at right angles with the river, which is here about seven hundred feet wide, with a rock bottom. It would save the State the annual cost of repairs, and at all times furnish enough water for canal purposes. It would cost about $20,000, and I would recommend the appropriation of such a sum for that purpose.

The present change bridge at the foot of lock No. 22 is badly located for the convenient use of that lock. A new one ought to be built at the head of lock No. 21, with a towing path on the over the upper side-cut, is built one-half of iron and one-half of wood. The wooden part is much out of repair, is unsafe, and should be rebuilt, so as to correspond with the other part. The estimated cost of such an improvement is $3,205.68, and as it is not included in the repair contract, provision must be made in some other way for it. It should be finished before navigation in the spring.

SECTION No. 2—*Robert C. Dorn, Superintendent.*

This section extends from the west end of the lower Mohawk aqueduct to the head of lock No. 27, and is thirty-two miles in length.

The structures on this section are:

18 locks—1 guard lock,
1 work shop and timber shed,
1 dam,
19 culverts,
6 lock houses,
20 road bridges, (wood,)
3 road bridges, (iron,)
3 aqueducts,
2 waste weirs,
16 farm bridges,
1 towing-path bridge.

The contract for the repairs of this section was let, March 4th, 1860, to William McClary, for the sum of $9,700 per annum, for the term of three years. It expires March 4th, 1863.

New structures.—Two bridges, one near Philip's lock, and one near Vedder's, have been built by the repair contractor. A slope wall with cement filling has been constructed at the breach of 1859, on the berm and tow-path sides of the four mile level, at an expense of $2,003.89. The embankment was considered dangerous on account of its height and proximity to the river.

Agreeable to a resolution of the Canal Board, snubbing posts have been set along the entire section, at a cost of $526.50. Several lock gates have been built to be used as needed—they cost $839.79.

Repairs to old structures.—In the fall of 1859, the arch culvert on section No. 30, was torn out by a breach in the canal. It has been rebuilt during the past season, is a work very much needed, and cost $3,179.10.

The contract for the removal of the big bevels on this section,

SECTION No. 3.—*Robert C. Dorn, Superintendent.*

This section extends from the head of lock No. 27 to the foot of lock No. 34, and is thirty-seven miles in length. The structures embraced on this section are:

14 lift locks,
3 guard locks,
10 aqueducts,
29 culverts,
5 waste weirs,
31 farm bridges,
18 road bridges (wood),
6 road bridges (iron),
1 wire suspension foot bridge at Fort Plain,
2 dams,
2 workshops, and
3 lock houses.

The repairs on this section were, on 23d day of April, 1859, let to John McDonald, for $7,440 per annum, for a term of three years from the 1st day of May, 1859. It expired May 1st, 1862, and was let for the term of four and two-third years, for the sum of $10,900 per annum, to Jared P. Dodge, Jr.

New Structures.—New docking has been placed along the bank of the Aurie's creek, the channel cleaned, the apron taken up and relaid, and the rear of the docking filled in. The whole cost $1,734.08.

The canal below Schoharie creek has, for a long time, suffered severely during the dry season for want of water. The dam was very poor, and was in constant want of repair. During the past year a dam of concreted stone masonary has been erected in its place, which will be permanent, and supply all the water necessary. The estimated cost, at contract prices, is $22,000; the final account is not yet complete.

No repairs have been necessary to be made by the superintendent, except to keep in repair the old Schoharie dam, which was not included in the repair contract. The dam was built of brush and stone, which formed but a slight barrier to the sudden freshets the stream is subject to. The repairs of the dam cost $4,617.88. The Schoharie creek aqueduct, over which the ice of last season was flooded, was repaired for $107.96.

Breaches.—There have been two breaches upon this section the past year. The first occurred on the night of May first, at

Newkirk's dry dock, near the village of Port Jackson. The dock was built under a resolution of the Canal Board, and was repaired by the State at a cost of $947.57. This break suspended navigation until the fourth of the month.

The second breach occurred on the eleventh day of June, and delayed navigation until the thirteenth. The break was in the berm bank of the canal on the fourteen mile level, near Printup's aqueduct. It was repaired by the repair contractor and cost $542.19.

Pursuant to a resolution of the Canal Board, snubbing posts have been set along the section, about eight hundred feet distant from each other; they cost $559.13.

Structures requiring repairs.—The head of the guard dock at Schoharie creek feeder should be raised about two feet. It has been necessitated by raising the water in the creek by the new dam. It is feared that the great rise of the water in the spring or at times of freshets will overflow the lock and enter the feeder and canal below, and wash out the banks, producing a breach. A new bulkhead should also be built, so as to allow the passage of sufficient water into the feeder in dry seasons. The whole would cost about $2,000, and should be done immediately.

Several new lock-gates and valves will be required on this section, and some slighter and less important repairs.

Printup's, Lasher's, Yates', Spraker's, the Canajoharie, and the Fort Plain aqueducts will require extensive repairs before the opening of the canal.

Ender's bridge should be raised, and with one or two others be repaired.

Amount expended by the superintendent of repairs..	$12,800 91
Amount paid repair contractor....................	7,871 27
Total for the year..........................	$20,672 18

Detailed Abstract of Expenditures by Superintendent of Repairs, Section 3, *for the fiscal year ending September* 30, 1862.

Structures or Works.	No. on section.	Cost of new structures.	Cost of repairs of old.	Total.
Locks	14			
Guard locks	3			
Aqueducts	10		$107 96	$107 96
Waste weirs	5			
Culverts	29			
Farm bridges	31			
Road bridges, (wood)	8			
" " (iron)	6			
Wire suspension bridge	1			
Feeders	2		4,617 88	4,617 88
Lock houses	3			
Work shops	2			
Docking		1,734 08		1,734 08
Repairs of breaches			1,489 76	1,489 76
Breaking ice and assisting boats in ice			1,477 49	1,477 49
Miscellaneous expenditures			2,860 40	2,860 40
Add ⅓ of Supt. salary				333 34
Add ⅓ of Clerk hire				180 00
Total				$12,800 91

SECTION NO. 4—*John Beardslee, Superintendent.*

This section extends from the foot of lock No. 34 to the head of lock No. 45, and is twenty-one miles in length. The following are the structures upon this section:

24 locks—1 guard lock,
192 lock gates,
4 aqueducts,
7 waste weirs,
10 culverts,
24 farm bridges, (wood,)
11 road bridges, (wood,)
2 road bridges, (iron,)
1 tow-path bridge, (wood,)
2 draw bridges, (wood,)
1 dam,
2 feeders with guard locks,

8 lock houses,
2 work shops,
12 watch houses.

The repairs upon this section were, on the 1st day of May, 1859, let to John F. Hosch, for the term of three years from that date, for the sum of $8,849 per annum.

The contract expired May 1, 1862. The section was again let (the contract to take effect at the expiration of the last) to John F. Hosch and Liberty L. Lowell, for four and two-third years, at the rate of $12,780 per annum.

New structures.—Twenty-two lock gates, three lock bridges, four farm bridges, and a bulkhead in the old feeder at Little Falls, have been constructed, and ten new valves have been put in old gates. Two lock gates, in place of the old gates of Seeley's patent, have been put in by the State; other structures have had all needful and necessary repairs.

Snubbing posts have been set along the whole length of the section, about three hundred and fifty feet distant from each other, pursuant to a resolution of the Canal Board.

Structures requiring repairs.—The towing path at the head of lock No. 34 should be straightened, and the docking should be repaired. A new pier is needed at the head of lock No. 35. Castle creek aqueduct must be pretty generally repaired.

At Schuyler's landing, on the berm side of the canal, piles should be driven for the protection of the bank and vertical wall, and at the foot of the towing path bank, to prevent its sliding into the river, and the towing path and vertical wall, for about a mile from the foot of lock No. 36, will have to be considerably repaired. A new bridge, in place of the swing bridge over the feeder on Mill street, Little Falls, should be built, the present bridge being very badly constructed. At the head of lock No. 40, a waste weir, in place of the old one which has gone out, should be built, and the towing pathgraveled between locks Nos. 40 and 41, nearly the whole distance.

Ten lock gates will have to be inserted the coming season, and a new pier is needed at the head of lock No. 41.

Breaches.—In the spring, before the diminution in the length of this section, a breach occurred at Castle creek. It was occasioned by the unusual flooding of the Mohawk river. The Rocky Rift feeder was breached in several places, and bridges, abutments, and whatever opposed the flood, were swept away. The repairs were completed before the opening of navigation, and cost $703.

The bottom of lock No. 35 burst out June 10th, 1862, and caused a detention of twenty-four hours.

Amount expended by superintendent of repairs	$6,623 57
Amount paid repair contractors	9,562 44
Total for the year	$16,186 01

SECTION No. 5.—*John Beardslee, Superintendent.*

This section extends from the head of lock No. 45, to the east bank of the Oneida Lake canal, at Higginsville, and is thirty-four miles in length.

The structures upon this section are as follows:

2 locks,
1 weigh-lock,
29 culverts,
23 farm bridges, (wood,)
6 farm bridges, (iron,)
18 road bridges, (wood,)
18 road bridges, (iron,)
1 towing-path bridge,
2 foot bridges, (wood,)
1 foot bridge, (iron,)
2 lock houses,
1 watch house,
2 timber sheds,
1 collector's office, Utica.
8 lock gates,
4 aqueducts,
4 waste-weirs.
2 work shops,
5 store houses,
2 dams,

The contract for the repairs of this section was awarded to Eli T. Bangs, for the term of three years, commencing March 4, 1860, at $5,890 per annum; it expires March 4, 1863.

New structures.—A dam on Wood creek, at Rome, has been built during the past season. The expenses were paid by the State, it not being included in the repair contract. It cost $501.05.

Two bridges have been built, one at the starch factory at Utica, and the other at Darling's, between Rome and Oriskany, and the others have been thoroughly repaired during the summer.

Structures to be repaired.—Lock No. 46 needs four new gates

The towing path on the nine mile level will have to be raised and graveled. The culvert under the canal, on Broadway, Utica, will have to be rebuilt, or iron tubes be substituted for it. Iron tubes will have to be put into Whitle creek culvert. The canal should be bottomed out from Clay street, Utica, to the starch factory; it has never been taken out down to the original bottom line; and about one hundred rods between Oriskany and Hennesey's should also be bottomed out; and a railing should be put on both sides of the Oriskany bridge approaches; they are high and dangerous.

The amount expended by the superintendent..	$4,738 00
The amount paid repair contractor..........	6,237 41
Total for the year...............	$10,975 41

The following are the amounts expended on the Eastern Division of the Erie Canal, for a series of years past.

YEAR.	Sec. 1.	Sec. 2.	Sec. 3.	Sec. 4.	Sec. 5.	Sec. 6.	Total.
1851......	$74,632 71	$27,317 17	$40,073 38	$30,451 95	$26,937 64	$23,289 89	$222,702 54
1852......	136,016 49	47,858 59	51,651 16	35,904 45	33,288 04	24,171 07	328,889 80
1853......	101,124 60	32,101 88	44,403 64	33,128 69	29,602 41	35,803 29	276,164 51
1854......	75,298 10	42,256 86	61,674 97	46,187 95	29,099 71	44,120 44	282,642 82
1855......	57,875 36	63,016 64	76,597 47	42,361 22	32,354 39	28,125 13	300,330 21
1856......	42,954 22	27,181 56	49,232 00	44,436 55	40,147 81	24,489 52	228,441 66
1857......	46,113 36	17,953 21	21,990 18	35,598 80	29,922 29	14,291 32	165,869 16
1858......	46,630 34	28,398 85	25,876 28	35,831 81	27,260 04	....	163,997 32
1859......	102,000 64	26,166 15	37,766 71	26,969 66	22,842 36	....	215,745 52
1860......	41,054 96	25,551 84	13,611 45	10,679 26	19,417 25	....	110,314 76
1861......	41,797 56	20,261 52	14,598 23	13,444 52	10,177 80	....	100,279 63
1862......	40,879 98	20,365 37	20,672 18	16,187 01	10,975 99	....	109,080 53

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CHAMPLAIN CANAL.

This canal commencing with the foot of the guard lock on the Mohawk river and extending to Whitehall, including the Glens Falls feeder, is divided into three superintendents' or repair sections. The whole length of the canal is about seventy-six miles. The first two sections of this canal were until the third day of February last in charge of Alexander Barclay, as superintendent of repairs, and the third section was in charge of Lyman Holbrook as superintendent, when Joseph McFarland was appointed superintendent in charge of the whole canal.

Section No. 1.

This section extends from the south end of the guard lock at Cohoes, to the south end of the first lock north of Fort Miller bridge, and is twenty-eight miles in length.

The contract for the repairs of this section was let to Charles J. De Graw, for the term of five years, commencing August 1st, 1860, at the sum of $8,659 per annum. It was abandoned June 1st, 1862, on account of the failure of the contractor to perform the contract. It was afterwards awarded to Archibald McArthur, for the term of four and one-fourth years, at the rate of $13,848 per annum, to commence October 1st inst.

The structures upon the section are:

12 locks,
1 weigh lock,
1 aqueduct,
11 waste-weirs,
8 culverts,
2 work shops,
1 store house,
36 farm bridges,
28 road bridges,
7 towing-path bridges,
7 lock houses,
1 " " and collector's office,
1 watch house,
1 timber shed,
2 dams, (one across Hudson, and one across Mohawk river,)
1 watch house and collector's office,
5 foot bridges.

New structures.—Three road bridges, at Waterford, Mechanicsville, and Fitzgerald's; five farm bridges, one on the three mile and four on the sixteen mile level, and three stone bridge abutments have been built, at an aggregate cost of $1,712.72.

Deming's new culvert at Rud's basin has been lengthened and the embankment on the berm side of the canal widened and strengthened. It cost $164.05.

The Mohawk river dam has been raised, in accordance with a resolution of the Canal Board, about fifteen inches, and at an expense to the State of $4,485.15.

The channel of the canal in Mills' swamp on the four mile level, Waterford side-cut, and in the vicinity of Stillwater basin on the sixteen mile level, was thoroughly dredged out and made uniformly thirty-five feet wide at bottom. It cost $1,136.25.

The ditches draining the water which leaks through the canal banks at Losee's and Holmes' farms were cleaned out at an expense of $120.

The towing path on the sixteen, four, three, and two mile levels has been repaired and graveled in many places for $508.65.

Structures repaired.—The aqueduct at Schuylerville, the waste weirs at Stillwater and Mechanicville, the towing path bridges at the Mohawk river, Fulton's, Waterford, and Saratoga, and many farm bridges were repaired, and cost $640.77.

New docking was put in at the Hudson and Mohawk rivers, Waterford side-cut, and on the sixteen mile level, at a cost of $586.50.

Breaches.—On the twenty-ninth of May last a large breach occurred at Coeville sand banks. Nine hundred feet of towing path, two hundred feet of embankment, and the bottom of the canal to the depth of twelve feet, for the distance of about eleven hundred feet, were swept out. The contractor refused to repair the breach, and his contract was therefore abandoned, and the repairs were made by the superintendent at an expense of $9,201.05. Navigation was suspended for six days in consequence of the breach. Its cause is unknown.

The expenses of lock tending to the State during the time from the abandonment of the old contract to the beginning of the new were $1,335.50.

Accounts which accrued under the former superintendents have been paid to the amount of $95.25.

For breaking ice, assisting boats in consequence of ice, raising sunken boats, watching the banks of the canal, raising bridge approaches, repairs of the State scow, tools, superintendent's salary, clerk hire, office rent, and other miscellaneous expenses the sum of $1,633.49 has been expended.

Sunken boats.—During the last year there have been five boats sunken upon this section. Two were sunken November 20th, 1861, on the four mile level, by running into each other; they were laden with lumber and wood. Another sunk December 1st, 1861, on the two mile level, having run upon a stone which had been pulled from the bank into the channel. The fourth, an old boat overladen with grain, sank May 3d, 1862, at Mechanicville, and the fifth sank August 20th in the Mohawk river, the water being too low in the channel.

Structures requiring repairs.—The structures which require thorough and extensive repairs or reconstruction are as follows: Schuylerville aqueduct, the lock gates at locks Nos. 8 and 10, Hutchin's, Manche's, Chase's, and Marshall's farm bridges, Ensign's, Mechanicville, and Schuylerville road bridges, the bridge abutments at Manche's, Fitzgerald's, Van Wei's, Ensign's, Hutchin's and Handy's, and the vertical wall at the head of Flinn's lock.

The snubbing posts at nearly all the locks on this section should be reset.

The prism of the canal between Coeville and Bemis Heights should be widened and the towing path in several places raised and graveled.

The embankment through the Coeville sand banks in the vicinity of the breach is insecure, and should be supported by a slope wall. The bottom of the canal which was washed out at the time of the breach, should be filled up to the height of the bottom elsewhere.

The only delays in navigation have been occasioned by the breach and the bad condition of the dam, which is too low and badly out of repair.

Amount expended by the superintendent of repairs..	$12,145 51
Amount paid repair contractor..................	4,606 96
Total for the year....................	$16,752 47

The weigh lock at Waterford was finished early this spring and has been in use nearly all the season. It has considerably relieved the West Troy level and weigh lock, and weigh lock at Albany, from the crowd of boats heretofore existing, and which this season must have been immense. It has weighed all the boats passing up and down the Champlain canal since it came into use, and it has saved a large amount in labor and tolls for the State. It is of simple construction, and is not liable to get out of order; the scale is accurate and meets the most sanguine expectations. Both lock and scale may truthfully be called a success.

The expenses of the construction of the weigh lock were charged to the repairs of the canal, and have necessarily increased the amount expended for repairs. The lock and scale cost $22,115.70.

SECTION NO. 2.

This section extends from the south end of the first lock north of Fort Miller bridge to Dunham's basin, and includes the Glens Falls feeder and pond above, making in all twenty-four miles in length.

The repairs of this section were let to Anson Bangs for the term of five years, commencing August 1st, 1860, for the sum of $9,300 per annum.

Upon this section the structures are as follows:

19 locks,
7 waste weirs,
19 farm bridges,
3 towing path bridges,
1 work shop,
1 dam across the Hudson river, 900 feet long,
3 aqueducts,
9 culverts,
17 road bridges,
10 lock houses,
1 store house.

A large amount of docking has been constructed upon the five mile level during the past year. It cost $531.40. The towing path on the five, three, one and two mile levels was repaired and graveled, for considerable distances, at a cost of $489.87.

The berm bank over the culvert, at Blackhouse, on the five mile level was found to be insecure, and, under the direction of the division engineer, was strengthened and widened. It cost the State $176.

The locks on the Glens Falls feeder have been, from time to time, graveled, at a total cost of $80.64.

The embankment at Robinson's road bridge, on the five mile level, has been raised, which, together with some repairs done to the bridge, cost $39.42. The slope wall on the one and three mile levels has been repaired in a few places.

During the season it became necessary to put a boat measurer and inspector at Fort Edward; the boats so often drawing more water than was legally allowed made frequent causes of complaint. He was paid $140.

Old accounts, or those accruing under the former superintendent, were paid, to the amount of $60.05. Extra lock tending paid by the State, and charged to the repair contractor upon this section, amounted to $81.05.

The breaking of the ice, and the assistance rendered boats in the ice, in the fall of last year, with other miscellaneous expenditures, including the salary of the superintendent and clerk hire, amounted, in the aggregate, to $1,013.60.

A large portion of the expenditures above named were charged to, and paid by, the repair contractor.

The following structures will require rebuilding, or very thorough repairs, the coming season:

The locks at Fort Edward, Moses kill and Fort Miller should be rebuilt, the flooring in the Glens Falls feeder locks repaired, and six new gates put in, a new road bridge at Stanton's, new farm bridges at Haverland's and Geer's on the Glens Falls feeder, the abutments to the covered road bridge at Fort Edward, Haverland's, Geer's and Galucia's bridges taken up and relaid.

A large amount of docking on the five mile level should be relaid before navigation in the spring.

Breaches.—A small breach on the Glens Falls feeder occurred September 9th. It was repaired by the contractor. Navigation was interrupted about 36 hours.

During the past year an old boat was abandoned by the owner and sank upon the five mile level. It caused no delay in navigation.

The improvement of the Glens Falls feeder, by stopping the leaks so long complained of, which was commenced late last year, in pursuance of chapter 213 of the Laws of 1860, has, to a considerable extent, been accomplished. The part still remaining unfinished will be completed before the spring navigation. This feeder feeds the Champlain canal for a distance of nearly 33 miles, and passes over, in its course to the canal, several broken limestone ledges. It lost, in its passage through these rock cuts, so much of its water, through the seams and crevices that, at the lower end, there was, except at unusually high water, insufficient for the purposes of navigation.

It now affords sufficient water both for navigation upon it and upon the main canal.

Amount expended by the sup't of repairs...	$2,160 22
do paid by repair contractor..........	8,506 63
Total for the year..............	$10,666 85

SECTION No. 3.

This section extends from Dunham's basin to Whitehall, a distance of twenty-two miles. The repairs of this section were, July 17, 1860, let by contract to Solon Vandenburgh for the term of five years, commencing August 1, 1860, for $4,300 per annum.

The following are the structures upon it:

- 8 locks,
- 3 culverts,
- 5 waste-weirs,
- 7 road bridges,
- 20 farm bridges,
- 4 towing-path bridges,
- 5 small dams on Wood creek,
- 4 lock houses.

During the past year a large quantity of new docking has been put in on the five mile level, and the towing-path has been raised, graded, and widened. The docking cost $461.96, and the repairs to the towing-path $656.75.

The prism of the canal on the five and twelve mile levels, which had been filled up with material from the banks and from the washing of streams, was cleared out at a cost of $531.17.

Snubbing posts have been set at Whitehall, at an expense to the state of $35. An old sunken boat on Wood creek was raised at an expense of $121.51.

The slope wall on the twelve mile level was repaired, and cost $90.81.

A new ice-breaker, and a new scow for the purpose of repairs, have been constructed during the past season; they cost $284.13. The bridges and bridge approaches on Wood creek and on the five mile level have been raised by the State, at a cost of $236.92.

Wood creek was dredged out for a short distance, and cost $74.25.

The expense to the State for lock tending, and the expenses for oil, repairs to lock gates, caulking waste-weirs, together with all other miscellaneous expenses, amount to $430.69.

Accounts accruing under the former superintendent have been paid to the amount of $25.78.

Structures to be rebuilt or thoroughly repaired are as follows: the bridge and bridge abutments at Smith's basin, the bridge at

Brown's, on the five mile level, new abutments to P. Adams' farm bridge, and quite a number of the lock gates.

Two boats sank, one on the 18th and one on the 19th of June last, upon the five mile level; they were old and too heavily laden.

Amount expended by the superintendent of repairs..	$4,196 07
Amount paid repair contractor..................	4,442 15
Total for the year......................	$8,638 22

The following are the amounts expended on the Champlain Canal for repairs during a series of years past:

Years.	Section 1.	Section 2.	Section 3.	Total.
1851,....	$23,870 27	$16,844 49	$10,252 07	$50,966 83
1852,....	37,611 43	19,246 62	18,660 96	75,519 01
1853,....	38,225 47	18,791 71	21,946 18	78,963 36
1854,....	31,025 06	24,894 34	16,663 01	73,463 48
1855,....	48,756 85	24,083 28	17,543 08	90,383 21
1856, ...	21,191 60	11,647 30	12,535 30	45,374 20
1857,. ...	54,357 76	9,574 78	8,707 77	72,640 31
1858,....	42,386 75	24,561 20	14,111 21	81,059 16
1859,....	37,306 00	15,726 39	11,843 37	64,875 76
1860,....	26,997 46	16,621 80	12,401 70	56,020 96
1861,....	12,305 84	11,488 99	4,952 97	28,747 80
1862,....	16,752 47	10,666 85	8,668 22	36,087 54

BLACK RIVER CANAL.

This canal is divided into two superintendent sections; a third section is formed by the Black river improvement. The whole canal, river improvement, feeders and reservoirs were, until February 3d, 1862, superintended by Lemuel W. Bowdish, when Griffith J. Griffith was appointed.

SECTION No. 1.

This section extends from the junction of the Black River canal with the Erie canal, at Rome, to a point one thousand feet north of lock No. 70, and is about twenty-four miles in length.

The following are the structures upon this section:

70 lift locks,

5 waste-weirs,
1 guard lock,
15 road bridges,
10 culverts,
2 road and change bridges,
2 draw bridges across Delta feeder,
19 lock houses,
3 aqueducts,
1 aqueduct over Rome and Ogdensburgh railroad,
18 farm bridges,
2 farm bridges, owned and supported by individuals.

The contract for the repairs of this section was let to Edward H. Edwards, for the term of four years and eight months, commencing May 1st, 1861, at $8,700 per annum.

The locks and lock gates upon this section were in very bad condition at the close of the last season, and required a large amount of repairs.

New structures.—Three new bridge superstructures have been put up, and four abutments have been rebuilt. The waste-weir on the three mile level, and the bridges over the waste-weir at Hulbertsville, and lock No. 63, have been built anew. The sluices at locks Nos. 52 and 54 have been reconstructed, and the docking at the head of lock No. 70 considerably repaired.

A new box drain has been constructed at Delta feeder; it cost $254.12.

An improvement in Willis brook aqueduct, under direction of the Canal Board, was made by removing one of the piers in the stream to allow the free passage of ice, and by the construction of a trunk to carry the water; it cost $683. An iron bridge superstructure was built over the junction of the Black River and Erie canals, at Rome, in place of the old wooden structure. The State, under the authority of the Canal Board, paid $1,640, the difference between the cost of a new wooden and iron superstructure; the residue was paid by the contractor for repairs.

Ten new lock-gates have been put in, and the banks of the canal, and structures upon it, have been considerably repaired, as by report of the superintendent.

Some of the structures have been neglected and allowed to get out of repair, and, unless they are put in proper repair during the winter and spring, will cause great hindrance and delay in navigation the coming season.

The lock-gates, valves and sluices are in a very dilapidated condition, and are, some of them, almost useless. The necessary repairs upon this section may delay the opening of this canal for two weeks after the opening of navigation on the other canals of the State.

The dam across the Mohawk river at Delta feeder, will have to be raised about a foot so as to supply the necessary quantity of water during the dry season to the canal.

Breaches.—A breach occurred in the towing path bank between locks No. 31 and 32, caused by the washing of the banks by the Lansingkill creek. Other delays have arisen from time to time from the bad condition of the lock-gates, the formation of bars in the channel of the canal by the washing of the streams entering the canal, and from other causes.

Amount expended by superintendents of repairs,	$1,114 42
Amount paid repair contractor	10,868 56
Total for the year	$11,982 98

SECTION No. 2.

This section commences at a point one thousand feet north of lock No. 70, and extends to the junction with the Black river at Lyons' Falls, a distance of twelve miles. It includes the Boonville feeder to Forestpost, a distance of ten and a half miles; also, the land above the dam at Forestpost, some two miles in length, and the Moose river improvement above the dam at Lyons' falls, one and one-half miles long.

The contract for the repairs of this section was let to Benjamin F. Maxson, for the term of five years, commencing March 1, 1861, at $4,178 per annum.

The following are the structures upon this section:

39 lift locks,
1 guard lock,
13 lock houses,
1 aqueduct,
6 waste weirs,
10 culverts,
2 dams,
16 road bridges,
22 farm bridges,
1 farm and change bridge,
1 road and change bridge,
1 towing-path bridge.

Upon this section the canal in general and the mechanical structures in particular have not been kept in as good order as they should have been, and must, before the opening of navigation, have thorough repairs. To make these repairs, and put the canal in good condition, a delay of one or two weeks after the usual time of opening will be necessary.

From time to time detentions have been caused by the bad condition of the canal and of the mechanical structures upon it, and the bars in the feeder which had not been taken out or have formed during navigation.

Structures repaired.—The superstructures of several bridges have been rebuilt, and quite a number have been repaired. Three new abutments have been put up.

Near the opening of navigation last spring a breach occurred at the head of lock No. 102, by which a sluice way and a portion of the towing-path was washed out. It was repaired in twenty-four hours.

A sink hole, near the head of Sugar river combined locks, has been caused by the washing of the river through the crevices in the rocks. It has been repaired several times during the season, but the repair can only be made permanent by grouting the seams of the rocks. And this can be done only at a time when the water is drawn from the canal.

An abandoned boat sank near lock No. 97, it was removed with but little delay.

The reservoirs at the head waters of the Black river have, this season, furnished material aid to navigation. They are three in number—the North, and South Branch, and the Woodhull reservoirs, they have each furnished their full quota, and have, together, supplied all the water necessary for the use of the Black River canal, and a very large quantity to the Erie canal.

For the protection of the reservoirs and their waters, a house should be built for the use of the man having charge of them, on North Branch reservior, which is about midway between South Branch and Woodhull reserviors. It should cost not to exceed five hundred dollars.

Amount expended by the superintendents of repairs	$858 85
Amount paid repair contractor	4,136 50
Total for the year	$4,995 35

SECTION No. 3,

Includes the Black river improvement from Lyons' Falls to Carthage, a distance of 42½ miles, and the repairs are contracted for by Ward & McVickar, for $3,800 per annum; their contract expires November 1, 1864.

The following are the structures upon this section:

1 road bridge at Carthage,
1 draw to Beach's bridge,
1 draw to Illingsworth's bridge,
Dam at Carthage.

At the opening of the canal last spring navigation was delayed four or five days by the formation of a heavy bar during the winter at the mouth of the lock at Otter creek. The bar is formed from the material carried down by Otter creek, which runs directly across the canal to the mouth of the lock, which has no protection from the current by a pier or otherwise.

The dredge was engaged three weeks in removing the bar so boats could pass without grounding. During the season the dredge was obliged to return twice to this bar and dredge it out. The least rise in the water of the creek has a tendency to fill up the channel. A pier for the protection of the channel should be built; such a one as is necessary, by the estimates of D. C. Jenne, Engineer, might be built for $5,000.

A portion of the dam at Otter creek and the west abutment became badly undermined. About fifty feet of the dam sank from three to four feet, and the abutment settled over ten inches. The dam has been repaired by cribs of timber filled with stone, and the abutment has been repointed and grouted so as to fill the seams and cracks made by the settling.

The breach was caused by an imperfect graveling when the work was in process of construction. It was repaired by the State, and cost $742.50.

Some plan differing from the present must be devised to maintain perfect navigation between Otter creek and Beech's bridge. If a plan similar to that at Otter creek was adopted, there would be no difficulty or detention.

Amount expended by the superintendents of repairs	$3,856 31
Amount paid repair contractors	3,795 00
Total for the year	$7,651 31

The following are the amounts expended on the Black River Canal, and Black River Improvement, for repairs, for a series of years past.

Years.	Section 1.	Section 2.	River Imp.	Total.
1851,....	$7,127 35	$15,574 18	....	$22,701 53
1852,....	8,370 56	22,240 37	....	30,610 93
1853,....	6,895 85	19,324 03	....	26,219 88
1854,....	12,321 43	16,256 82	....	28,578 25
1855,....	9,347 28	24,514 40	....	33,861 68
1856,....	4,826 55	12,377 18	....	17,203 73
1857,....	3,935 68	9,860 97	....	13,796 65
1858,....	3,999 00	14,622 75	....	18,621 75
1859,....	8,107 70	16,818 03	....	24,925 73
1860,....	4,821 54	14,724 85	$2,741 55	22,287 94
1861,....	9,962 37	9,639 59	3,799 92	23,401 88
1862,....	11,982 98	4,995 35	7,651 31	24,629 64

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CHAMPLAIN CAN

	Sec. 2.
18	$16,844 4
18	19,246 6
18	18,791 7
18	24,894 3
18	24,083 2
18	11,647 3
18	9,574 7
18	24,561
18	15,726
18	16,621
18	11,488
18	10,666

2, of the Black

do 31....	6 10	6 10	6 8	[illegible]	[illegible]
do 32....	6 9	6 10	6 8	6 10	6 9
do 33....	6 10	6 9	7 0	7 0	6 10
do 34....	....	....	7 0	7 0	7 0

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CHAMPLAIN CAN

	Sec. 2.
18	$16,844 4
18	19,246 6
18	18,791 7
18	24,894 3
18	24,083 2
18	11,647 3
18	9,574 7
18	24,561
18	15,726
18	16,621
18	11,488
18	10,666

2, of the Black

do 31....	6	10	6	10	6	8	[illegible]	[illegible]	6	
do 32....	6	9	6	10	6	8	6	10	6	9
do 33....	6	10	6	9	7	0	7	0	6	10
do 34....	....		....		7	0	7	0	7	0

ERIE CANAL.—Continued.

	October.		Novem.		May.		June.		July.		August.		Sept.	
Mitre sill:	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
Lock 34....	7	3	7	3	7	0	7	0	7	3	7	2	7	3
do 35....	7	0	7	0	7	0	7	0	7	0	7	0	7	0
do 36....	7	0	7	0	7	0	7	3	7	0	7	0	7	0
do 37....	7	0	7	0	7	0	7	0	7	0	7	0	7	0
do 38....	7	0	7	0	7	0	7	4	7	0	7	0	7	0
do 39....	7	0	7	0	7	0	7	0	7	0	7	4	7	6
do 40....	7	6	7	6	7	6	7	0	7	3	7	0	7	0
do 41....	7	0	7	0	7	0	7	0	7	2	7	0	7	0
do 42....	7	0	7	0	7	0	7	0	7	0	7	0	7	0
do 43....	7	0	7	0	7	0	7	0	7	0	7	0	7	0
do 44....	7	0	7	0	7	0	7	0	7	0	7	0	7	0
do 45....	7	0	7	0	7	0	7	0	7	0	7	0	7	0
do 46....	7	0	7	0	7	0	7	0	7	2	7	0	7	0
Utica 9-m lev.	7	0	7	0	6	10	7	0	6	9	6	10	6	0
do 60-m lev.	7	0	7	0	6	10	6	9	6	9	6	10	6	9
Teft's w. wier:														
60-m. level.	7	0	7	0	6	10	6	9	6	9	6	10	6	9
Rome 60-m lev	7	0	7	0	6	10	6	9	6	9	6	10	6	9
Ft. Bull w. w.:														
60-m. level.	7	0	7	0	6	10	6	9	6	9	6	10	6	9

CHAMPLAIN CANAL.

	Oct.		Nov.		May.		June.		July.		Aug.		Sept.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
South side Mohawk river	5	0	4	9	5	3	4	3	5	10	4	9	4	11
North side Mohawk river	4	11	4	0	5	0	4	4	5	8	3	8	3	11
Waterford side-cut, old lock..	7	3	5	0	6	2	5	9	5	3	4	6	4	10
do Main st. bridge....	4	9	4	8	5	0	5	0	4	9	4	1	4	5
3¾-mile level, Cold Sp'g creek.	5	7	5	1	5	0	5	0	4	11	4	9	4	10
3¾-m. l., Gardner's road bridge.	5	9	5	4	5	1	5	1	5	0	4	11	5	0
1-mile level, Cole's waste weir.	5	0	4	10	5	0	5	0	5	1	4	8	4	9
4-m. l., Best's farm bridge....	4	5	5	6	....		5	2	5	0	4	8	4	10
do Mechan'ville R. R.	4	6	4	6	5	2	5	1	5	0	4	7	4	8
16-mile level, Rudd's basin...	5	0	5	0	5	3	5	1	5	0	4	6	4	7
do Bemis H'ts w. weir.	6	0	5	11	5	2	5	2	5	0	4	6	4	6
do Salisb'y's road b'ge	4	4	5	10	5	3	5	2	4	11	4	9	1	10
do Schuyler'lle aqued.	5	6	5	3	5	5	5	3	5	6	5	3	5	2
Hudson river, Rich. House...	6	7	4	9	6	1	5	4	6	0	5	8	5	9
do north of bridge...	4	11	6	10	5	2	5	1	6	0	5	9	5	10
2-mile level, Suftin's bridge ..	5	5	5	3	5	3	5	4	5	2	5	0	5	1
1-m. l., Ft. Miller waste weir.	5	0	5	0	4	8	4	9	4	10	4	9	4	8

CHAMPLAIN CANAL.—Continued.

	Oct.		Nov.		May.		June.		July.		Aug.		Sept.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
1-m. l., Lincoln's foot bridge	4	9	....		4	8	4	9	4	10	4	10	4	11
5-m. l., Rock cut	4	8	4	1	4	8	4	9	4	10	4	9	4	9
5-m. l., Ft. Edward bridge	....		....		5	2	5	1	5	3	5	10	5	1
Glens Falls feeder	5	4	5	4	5	1	5	0	5	2	5	0	4	1
do upper lock	5	0	4	0	5	8	5	10	5	9	5	6	5	5
do Brown's bridge	5	0	5	0	4	4	4	7	4	5	4	5	4	5
do Green's bridge	....		....		4	11	4	9	4	10	4	9	4	10
12-mile level, Dunham's basin	5	0	5	1	5	3	5	5	5	4	5	2	5	1
12-m. l., Barker's foot bridge	....		....		5	0	5	1	5	1	5	0	5	0
Wood Creek, R.R. b'ge, Ft. Ann	....		....		7	8	7	1	7	0	6	3	6	2
do Dewey's b., S. new lock	....		....		9	2	8	5	8	3	8	0	8	0
do Wood's farm bridge	....		....		8	2	7	9	7	5	7	2	7	1
5-m. l., Lockwood farm bridge	....		....		5	0	5	0	5	0	4	11	4	10
5-m. l., Whitehall change b'ge	....		....		5	4	5	4	5	0	4	10	4	9

BLACK RIVER CANAL.

Mitre sill of lock No. 1	....		4	6	5	0	4	8	4	10	4	8	4	8
do do 2	....		4	7	4	8	4	6	4	6	4	4	4	6
do do 3	....		4	7	4	8	4	4	4	6	4	6	4	6
do do 4	....		4	8	4	6	4	4	4	4	4	6	4	8
do do 5	....		4	8	4	3	4	6	4	3	4	3	4	7
do do 6	....		4	6	4	4	4	2	4	4	4	0	4	4
do do 7	....		4	7	4	0	4	3	4	7	4	2	4	6
do do 8	....		4	4	4	6	4	0	4	6	4	4	4	4
do do 9	....		4	4	4	4	4	0	4	4	4	4	4	8
do do 10	....		4	5	4	8	4	4	4	3	4	2	4	4
do do 11	....		4	4	4	5	4	3	4	5	4	4	4	3
do do 12	....		4	5	4	3	4	6	4	4	4	5	4	4
do do 13	....		4	4	4	7	4	4	4	6	4	0	4	6
do do 14	....		4	5	4	0	4	2	4	8	4	2	4	6
do do 15	....		4	6	4	8	4	3	4	4	4	3	4	7
do do 16	....		4	5	4	3	4	4	4	5	4	6	4	4
do do 17	....		4	4	4	6	4	4	4	6	4	6	4	2
do do 18	....		4	6	4	6	4	5	4	4	4	3	4	3
do do 19	....		4	3	4	2	4	3	4	3	4	0	4	0
do do 20	....		4	4	4	6	4	5	4	4	4	0	4	2
do do 21	....		4	5	4	0	4	0	4	8	4	3	4	4
do do 22	....		4	4	4	2	4	2	4	6	4	5	4	6
do do 23	....		4	5	4	6	4	0	4	3	4	7	4	3
do do 24	....		4	4	4	5	4	0	4	4	4	6	4	6
do do 25	....		4	4	4	3	4	2	4	2	4	4	4	8
do do 26	....		4	6	4	2	4	6	4	0	4	4	4	6
do do 27	....		4	5	4	4	4	0	4	3	4	5	4	4

BLACK RIVER CANAL.—Continued.

	Oct.	Nov.	May.	June.	July.	Aug.	Sept.
	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.
Mitre sill of lock No. 28	....	4 5	4 6	4 4	4 4	4 6	4 4
do do 29	....	4 6	4 6	4 3	4 6	4 6	4 8
do do 30	....	4 8	4 6	4 6	4 6	4 3	4 6
do do 31	....	4 8	4 0	4 3	4 2	4 4	4 6
do do 32	....	4 5	4 2	4 4	4 3	3 10	4 5
do do 33	....	4 9	4 3	4 2	4 4	4 4	4 2
do do 34	....	4 5	4 5	4 4	4 3	4 2	4 2
do do 35	....	4 5	4 2	4 2	4 0	4 4	4 2
do do 36	....	4 4	4 8	4 0	4 2	4 6	4 0
do do 37	....	4 3	4 0	4 3	4 4	4 6	4 3
do do 38	....	4 4	4 4	4 0	4 4	4 4	4 4
do 5 combined 43	..	4 4	4 6	4 0	4 2	4 0	4 3
do 3 combined 46	....	4 5	4 6	4 10	4 3	4 2	4 4
do do 47	....	4 4	4 6	4 0	4 0	4 3	4 3
do do 48	....	4 4	4 0	4 0	4 3	4 4	4 5
do do 49	....	4 6	4 4	4 3	4 6	4 6	4 4
do do 50	....	4 5	4 3	4 4	4 4	4 4	4 6
do do 51	....	4 4	4 2	4 4	4 6	4 6	4 4
do do 52	....	4 3	4 6	4 6	4 3	4 3	4 5
do do 53	....	4 2	4 6	4 0	4 2	4 0	4 6
do do 54	....	4 3	4 4	4 2	4 0	4 0	4 4
do do 55	....	4 4	4 3	4 2	4 3	4 9	4 0
do do 56	....	4 4	4 4	4 4	4 5	4 0	4 2
do do 57	....	4 4	4 6	4 6	4 4	4 2	4 0
do 3 combined 60	....	4 5	4 3	4 4	4 6	4 4	4 4
do do 61	....	4 6	4 5	4 3	4 3	4 4	4 2
do do 62	....	4 7	4 7	4 2	4 0	4 6	4 3
do do 63	....	4 6	4 6	4 0	4 3	4 5	4 6
do do 64	....	4 6	4 8	4 3	4 6	4 0	4 8
do do 65	....	4 5	4 5	4 3	4 4	4 4	4 6
do do 66	....	4 6	4 8	4 0	4 2	4 4	4 4
do do 67	....	4 3	4 8	4 2	4 0	4 2	4 4
do do 68	....	4 5	4 7	4 0	4 2	4 3	4 6
do do 69	....	4 4	4 8	4 4	4 6	4 4	4 4
do do 70	....	6 0	6 0	4 4	4 6	4 6	4 6
do do 71	....	4 6	4 0	4 6	4 10	5 0	5 0
do do 72	....	4 6	4 0	4 4	4 6	4 6	4 8
do do 73	....	4 6	4 6	4 8	4 4	4 4	4 8
do do 74	....	4 6	4 4	4 3	4 6	4 6	4 6
do do 75	....	4 5	4 0	4 4	4 6	4 5	4 6
do do 76	....	4 5	4 0	4 4	4 3	4 6	4 4
do do 80	....	4 4	5 0	4 9	4 0	4 0	4 2
do do 81 to 84	....	4 4	4 0	4 9	4 8	4 6	4 6

BLACK RIVER CANAL.—Continued.

	Oct.	Nov.	May.	June.	July.	Aug.	Sept.
	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.
Mitre sill of lock No. 85	....	4 4	4 6	4 4	4 4	4 4	4 4
do do 86	....	4 4	4 6	4 5	4 3	4 5	4 4
do do 87	....	4 4	4 6	3 10	4 0	4 3	4 4
do combined 91	....	4 5	4 8	4 4	4 6	4 4	4 6
do do 92	....	4 4	4 6	4 4	4 6	4 6	4 8
do do 93	....	4 4	4 0	4 2	4 4	4 0	4 6
do do 94	....	4 4	4 3	4 4	4 3	4 0	4 6
do do 95	....	4 3	4 6	4 2	4 0	4 3	4 4
do do 96	....	4 4	4 3	4 4	4 3	4 6	4 6
do do 97	....	4 5	4 3	4 0	4 2	4 4	4 7
do do 98	....	4 4	3 10	4 2	4 4	4 6	4 5
do combined 101	....	4 5	4 0	4 0	4 3	4 0	4 4
do do 102	....	4 4	4 0	4 0	4 2	4 3	4 6
do combined 105	....	4 3	4 0	4 2	4 4	4 6	4 4
do do 107	....	4 4	4 6	4 3	4 7	4 8	4 6
Feeder near State shop	....	4 6	....	....	....	....	4 10
Feeder near Pitcher's bridge	....	4 8	....	....	....	....	....
Feeder at Hawkinsville	....	4 5	....	....	....	....	4 8
Feeder at stop gate near Lee's	....	4 5	....	....	....	....	4 3
Feeder at Grossman's	....	4 3	....	....	....	....	....
Feeder at upper waste weir	....	4 3	....	....	....	....	4 4

Engineer's Office, Eastern Division,
Albany, ***Dec. 9th*****, 1862.**

Hon. Wm. I. Skinner, ***Canal Commissioner*** **:**

Sir: I have prepared statements showing the condition and progress of work on the several canals on the eastern division for the fiscal year ending Sept. 30th, 1862, which are herewith presented in Tables Nos. 1 and 2. They refer to work which has been under the supervision of the Engineer Department, and embrace both construction and repairs.

On the enlargement of the Erie canal the work under contract is all completed and the final accounts closed, with the exception of Secs. Nos. 60 and 62, the finals of which are completed and ready for settlement.

By act, chap. 169, Laws of 1862, the construction accounts of the enlargement were closed on the 1st of September, and all necessary work must be brought under the head of repairs. There are many points where improvements are necessary in order to make good navigation, facilitate the transaction of business, and prevent hindrances and delays, with the present increase of business.

On the level at Albany, between Locks Nos. 1 and 2, the canal was constructed on the old plan, with the bench walls, which prevent boats coming near the towing path to unload. It would aid very much to the transaction of business if vertical walls, with a single stick of docking on top, were put in on a portion of this level, and all of it thoroughly bottomed out. The superstructure of the Ferry street bridge in the city of Albany should be rebuilt this winter. I would recommend that an iron bridge ("Whipple's Trapezoidal Truss") should be built in place of the present wood covered bridge.

At West Troy, for at least three-quarters of a mile, in the vicinity of the side-cut, a vertical wall is very necessary on the towing path side, to facilitate the passage of boats and prevent crowds and jams which frequently occur. This part of the canal is also on the plan of the bench wall, which should all be removed.

The level at West Troy has been very much relieved by the construction of a weigh lock at Waterford, so that all boats from the Champlain canal are weighed at the latter place, instead of West Troy, as heretofore.

Much detention occurs at the Sixteen locks in the vicinity of Cohoes, in consequence of the plank foundation being forced up in the chamber of the lock by the pressure of water from the other lock when full; the foundations of the same being connected through under the culvert. These locks were all built prior to 1842, and no concrete was used in the foundations.

It is important that each lock should be thoroughly repaired before the opening of navigation, by concreting the foundations.

The change bridge at the foot of lock No. 22, near the upper Mohawk aqueduct, is located very badly for the convenience of navigation, and should be changed to a point below the entrance of the feeder below lock No. 21.

This would require a new towing path bank or bridge across the basin on the level between the two locks.

The wing dam for the Mohawk feeder at the upper aqueduct is in rather a dilapidated condition, and is in bad shape with the general current of the river, being subject to the force of the river lengthwise, and must always be expensive in its repairs.

When a new dam is required, it seems to me to be sound policy to construct a stone dam directly across the river from the bulkhead. The foundation would be on rock, and the height would not be more than eight feet, the length from six to seven hundred feet.

The stone dam at Schoharie creek is complete, and is a very valuable improvement, as all the water of the creek, in a dry time, can be forced into the canal, and will be an abundant supply for the same to the upper Mohawk aqueduct.

The canal has had the full benefit of the Schoharie creek during the dry part of the season, by means of the coffer dams used in the construction of the dam.

The head of the guard lock for the Schoharie creek feeder should be raised two feet and a bulkhead put in (to take the place of the old lock gates) with an increased number of valves, or those of larger area, in order to pass the quantity of water required. This work should be done before the opening of navigation next spring.

From Schoharie creek to Castle creek there is a very considerable portion of the canal which was enlarged prior to 1842, and has the bench wall.

In many places the towing path is worn down, by its constant use for twenty years, and requires raising; and a large amount of material from the top of the towing path has been drawn into the canal by the tow lines, there being no wall or pavement to prevent, and most of this material lies at the bottom angle, and should be removed. The same is applicable to portions of the canal from Castle creek to Little Falls, and from Little Falls to Utica.

The interest of the State and of those navigating the canals require that those portions of the canal built on the original plan, with the bench wall, should be improved, and the towing path made to conform to the plan adopted in 1850 for the enlargement. If this was done, and the bottom thoroughly cleaned out at these points, many of the delays of boats which now occur would be avoided.

From Utica to Higginsville, with the exception of two miles at

Rome, the canal is in good condition, having been built on the plan of slope walls from bottom of canal. The only delays which have occurred on this part of the canal have been from a lack of water to keep up the level west of Utica at certain times in the year, which is doubtless caused by too large a portion of the water taken in at Rome from the Mohawk and Black rivers being required west of that point. This fact demonstrates the necessity of the proposed feeder from Fish creek, which without doubt will have to be brought in at some future time not far distant.

CHAMPLAIN CANAL.

Since the last annual report the south guard lock at Cohoes, the weigh lock and fixtures at Waterford, and Parish lock (No. 17), on Wood creek, have been completed and brought into use. The dam across the Mohawk, at Cohoes, has been raised 1½ feet, and a stone dam has been nearly completed across Wood creek, near Parish lock.

The contract for driving piles on 16 and 5 mile levels is very near completed.

Contracts were made for stopping leaks on the Glens Falls feeder, including about 1⅔ miles of that portion which passes over the limestone rock, in the vicinity of Glens Falls. A large quantity of water has heretofore been wasted through the crevices in the rock at this point, making such a current as was almost impossible to navigate the same. Large sums of money have been expended to stop the crevices and prevent the waste of water, but to no purpose. The plan now adopted is to excavate the bottom and sides, and put in a vertical wall, in mortar, on each side, and a concrete or rubble wall in the bottom. About 32 chains of this work was completed last spring, and operates with almost perfect success; the balance will be completed the coming spring, when it is believed that the entire object will be accomplished. This part of the feeder is made 35 feet wide on bottom and 5 feet deep, as required by act, chap. 213, Laws of 1860.

It is very important that the locks at Fort Miller, Moses kill, and Fort Edward should be rebuilt during the coming year. The surveys and location of the same have been made and adopted by the Canal Board. The two latter can be built during the summer season, as they have new locations, but the former must be rebuilt on the original site and the work put in during the suspension of navigation; but the materials can all be delivered during the summer.

The high bank on this canal below Coveville requires protecting to a considerable extent, as three serious breaks have occurred at this point within the last few years, and during the last year. The character of the materials of which the bank is composed is very bad, and the prism of canal for several hundred feet is from 10 to 16 feet below bottom. The prism should be filled up, and the bottom and sides lined with good material, and the face of towing path protected by a substantial slope wall, or by a concrete wall, and the outside with a rip-rap wall at foot of slope.

The banks of this canal are generally very low for the quantity of water that is maintained there; and the time is not far distant when it will be necessary to make extensive improvements in the same, in order to keep the canal in a condition for doing the constantly accumulating business.

BLACK RIVER CANAL.

All the work on this canal under contract is completed and settled up, excepting the bridges across Black river, at Carter's ferry and Tiffany's landing, which are being built under a special law, and will be both completed this fall and settled by the 1st of March.

Some improvements are necessary at different points to make good navigation. On the main canal there are many places where deposits are made from small streams running into the canal from steep side hills, particularly along the Lansing kill, where the material is slate gravel, and easily moved by the action of water. Some of these cannot be obviated without great expense, and the only way is to have the bars immediately removed by the repair contractor. At other points the deposits can be carried under the canal by building a culvert, or into streams by cutting a ditch by the side of canal.

The dam across the Mohawk river at Delta has settled so that in low water the quantity of water designed to be passed through the Delta feeder cannot be obtained. It will be necessary to raise the dam about one foot, and repair the same thoroughly, in order to make the feeder available for its designed use, to supply the canal from lock No. 9 to the Erie canal, and save passing so large a quantity of water through the canal from the Lansing kill feeder, at lock No. 34, to this point. The guard lock at the head of the feeder is partially filled up, and the channel, above the lock, into the river, also requires cleaning out, in order to admit a free passage of water, and to allow boats to pass.

The canal is in fair condition from Rome to Lansingkill aqueduct. From thence to south end of summit many of the locks and the sluices around the same have been very seriously neglected, and, if not put in good repair in a short time, will become of no use. The gates are much dilapidated, and the valves in the same leak very badly. The culvert valves in the combined locks are not used for want of repair, and the sluices to some of the locks are almost useless.

A much larger quantity of water has been passed through this part of the canal than was necessary to feed it, instead of passing it off at the waste-weir at south end of summit into the Lansing kill, as originally designed. All the water from Black river to supply the Erie canal at Rome was to be passed out at this waste weir into Lansing kill, except what was necessary to supply the Black River canal, but it seems that in order to keep up the water in the lower end of the Black River feeder, the waste timber at the weir has been raised, which forces more water than is necessary down the canal; this should not be allowed.

The feeder has become filled up at various points in its entire length, so that boats drawing a regular amount of water cannot navigate the same, without raising the water above its usual height, and the required amount of water for the Erie canal cannot be passed through. It is very important that all the different points on the feeder should be bottomed out before the opening of navigation next spring, and as the ice and snow usually remains in the feeder longer than in the other canals, it may be well to delay the opening of this canal for a week or two in the spring, in order to have this work done, and to clean out the bars on the main canal, and fix the sluices and valve gates to the locks.

The canal from Boonville to Lyons Falls is usually in very good condition, except the valves to lock gates, which leak very badly, and the culvert valves to the combined locks, which are not used at all, being out of repair.

These cause a much larger amount of water to be taken north from summit than is necessary, and divert water from the Erie canal.

The navigation on Black river, from Lyons Falls to Otter creek, has been in good order most of the season. From the latter place to Illingworth's bridge, there has been considerable difficulty at times, at different points, in navigating the same, in consequence of shoal water and trouble with the snags in the bottom.

The lock at Otter creek is so located that in time of floods, the water of the creek strikes directly across the channel at the foot of lock, and fills up the same with sand and other deposit. This has kept the dredging machine used by the repair contractor at work for a considerable portion of the time at this point, and prevented them doing all the necessary work in other parts of the channel below. In order to avoid this filling up, a pier will have to be extended down some 300 feet below the wing of the lock on the river side, and raised above high water; and guard banks put in on the land side, about 500 feet long, and on the river side of lock embankment, about 200 feet long. Unless this work is done this winter the channel will be filled up in the spring, and cause delay in navigating the river.

Some plan will have to be devised different from the present one, to make good navigation from Otter creek to a point about two miles below Beach's bridge, in seasons of great drought, as has been the past season.

The reservoirs located at the head waters of Black river have answered the purpose designed during the past season, and have been used to their utmost capacity.

In my opinion it is very important that Chub Lake reservoir, which was once adopted and commenced, should be built at an early day. This will add about one-third to the quantity of water now reserved for the use of the Black River and Erie canals.

I would recommend that a good dwelling-house should be built at the North Branch reservoir, at a cost of $500, for the use of the man who has charge of all the reservoirs, and that he should be required to spend his whole time in looking after the same, particularly in the spring of the year, when the high floods occur; also, that he should be required to keep accurate notes of the condition of each reservoir, from day to day, as he may visit them, during the year, such as may be prescribed by the State Engineer and Surveyor and Canal Commissioner, and make monthly reports of the same to both Departments.

I have had measurements taken of all the mechanical structures on the Erie canal, on the Eastern Division, and have carefully prepared a table of the same, which is annexed at the end of the volume, giving the general details of all the mechanical structures on this division.

All of which is respectfully submitted.

DANIEL C. JENNE,
Engineer, Eastern Division.

TABLE No. 1.

STATEMENT *showing the character of work, estimated cost at contract prices, amount of work done during the fiscal year ending September 30th,* 1862; *whole amount done, and amount remaining to be done under existing contracts on the Eastern Division of the New York State Canals.*

Character of work.	Estimated cost at contract prices.	Amount done from Oct. 1, 1861, to Oct. 1, 1862.	Whole amount done.	Amount remaining to be done.
ENLARGEMENT OF THE ERIE CANAL.				
Sections Nos. 41, 42, 43 and 44......	$28,969 98	$2,799 98	$28,969 98	Settled.
do 45, 46 and 47..........	34,055 83	725 83	34,055 83	do
do 60....................	42,303 16	5,363 16	42,303 16	Completed.
do 62....................	129,948 86	7,448 86	129,948 86	do
Completion of enlargement from west end of section 47 to lock No. 29....	10,352 24	2,472,24	10,352 24	Settled.
Bottoming canal below and raising banks above lock No. 34, and raising banks between locks No. 39 and 40.	21,014 87	2,274 87	21,014 87	do
Bottoming canal below lock No. 42, and raising banks on section 127...	2,154 78	94 78	2,154 78	do
Bottoming the Erie canal through the city of Utica....................	10,680 83	890 83	10,680 83	do
Raising banks on sections Nos. 83 and 84, and bottoming canal on section No. 84......................	2,352 35	952 35	2,352 35	do
Raising bridge superstructures on superintendent section No. 1........	3,912 78	402 78	3,912 78	do
Raising bridge superstructures on superintendent section No. 2.........	5,682 97	972 97	5,682 97	do
Raising bridge superstructures on superintendent section No. 3.........	3,373 10	293 10	3,373 10	do
Raising bridge superstructure on superintendent section No. 4.........	2,120 12	150 12	2,120 12	do
Raising bridge superstructures on superintendent section No. 5........	7,527 22	1,077 22	7,527 22	do
Bridge abutments on sections Nos. 33 and 35..........................	6,837 15	1,127 15	6,837 15	do
Vertical wall on section No. 108, in the city of Utica.................	8,672 66	8,672 66	8,672 66	do
Iron trapezoidal bridge superstructure over Erie canal in Van Vliet street, Cohoes........................	3,000 00	3,000 00	3,000 00	do
Raising banks and bottoming canal at the west end of repair section No. 3.	6,594,28	6,594 28	6,594 28	do
	$329,553 18	$45,313 18	$329,553 18	
REPAIRS OF THE ERIE CANAL.				
Rebuilding Schoharie creek dam.....	$22,000,00	$11,320 00	$17,140 00	$4,860 00
Removing big bevels from locks on superintendent sec. No. 2.........	1,787 50	212 50	1,787 50	Settled.
Repairs of arch culvert on section No. 30............................	3,179 10	3,179 10	3,179 10	do
	$26,966 60	$14,711 60	$22,106 60	$4,860 00

TABLE No. 1.—Continued.

Character of work.	Estimated cost at contract prices.	Amount done from Oct. 1, 1861, to Oct. 1, 1862.	Whole amount done.	Amount remaining to be done.
CHAMPLAIN CANAL.				
Rebuilding Bassett lock (No. 10) enlarged	$14,823 36	$163 36	$14,823 36	Settled.
Rebuilding Parish lock (No. 17) on Wood creek (including dam)	20,000 00	18,370 00	18,370 00	$1,630 00
Rebuilding south guard lock at Cohoes	14,274 40	14,274 40	14,274 40	Completed.
Weigh lock and weigh master's office at Waterford	22,115 70	19,075 70	22,115 70	do
Scale for weigh lock at Waterford	3,500 00	3,500 00	3,500 00	Settled.
Culvert and coffer dam for weigh lock at Waterford	3,499 69	1,649 69	3,499 69	do
Driving piles on 16 and 5 mile levels	18,180 00	4,430 00	14,050 00	4,130 00
Stopping leaks on Glens Falls feeder, section No. 1	25,474 00	12,050,00	12,050 00	13,424 00
Stopping leaks on Glens Falls feeder, section No. 2	21,334,00	6,710 00	6,710 00	14,624 00
	$143,201 15	$80,223 15	$109,393 15	$33,808 00
BLACK RIVER CANAL.				
Dam and lock at or near Otter creek	$44,421 91	$7,531 91	$44,421 91	Settled.
Bridge for Delta feeder	2,086 22	286 22	2,086 22	do
South branch reservoir	11,196 27	1,226 27	11,196 27	do
Bridge across Black river at Carter's landing	8,981 00	5,210 00	5,800 00	$3,181 00
Bridge across Black river at Tiffany's landing	8,554 90	4,640 00	7,530 00	1,024 90
	$75,240 30	$18,894 40	$74,034 40	$4,205 90

TABLE No. 2.

STATEMENT *showing total amount done on work not under contract, on the Eastern Division of the New York State Canals, from October 1st,* 1861, *to October 1st,* 1862, *as performed under the supervision of the Engineers.*

Character of work.	Amount done.
Erie canal.	
Repairs of Sauquoit creek aqueduct	$44 27
Building sewer in William St., Utica	167 14
Repairs of Whitehall creek culvert	140 00
Iron bridge superstructure over feeder at Little Falls	1,778 13
Farm bridge superstructure over Erie canal, in town of Danube	582 89
Raising abutments to feeder bridge at Little Falls	1,048 65
" " and embankments to iron bridge, Fultonville	326 24
Taking down, removing, and rebuilding change bridge at lower Mohawk aqueduct	1,206 00
Rebuilding and raising superstructure of Casler's farm bridge	264 20
Repairing berm bank near Printup's aqueduct	181 50
For graveling bank on sec. No. 58	135 00
Total	$5,874 02
Champlain canal.	
Construction of new pier at Emprey's waste weir	$24 32
Improvement of creek channel at Eastman's waste weir	894 67
Rebuilding waste weir at Smith's basin	204 88
Improvement of dam across Mohawk at Cohoes	2,249 76
Total	$3,373 63

Black River canal.

Box drain at Delta feeder	$254 12
Improvement Willis brook aqueduct	683 00
Iron bridge superstructure at Rome	1,640 00
Total	$2,577 12
Total for division	$11,824 77

Abstract of foregoing tables.

	Estimated cost at contract prices.	Amount done from Oct. 1, 1861, to Oct. 1, 1862.	Whole am't done.	Amount remaining to be done.
Enlargement of the Erie canal	$329,553 18	$45,313 18	$329,553 18	
Repairs of the Erie canal	26,966 60	14,711 60	22,106 60	$4,860 00
Miscellaneous		5,874 02		
Champlain canal	143,201 15	80,223 15	109,393 15	33,808 00
Miscellaneous		3,373 63		
Black River canal	75,240 30	18,894 40	71,034 40	4,205 90
Miscellaneous		2,577 12		
Totals	$574,961 23	$170,967 10	$532,087 33	$42,873 90

◆

EXTRAORDINARY REPAIRS AND IMPROVEMENTS.

The closing of the enlargement and construction accounts of our public works on the first day of September last, by act chapter 169, of the Laws of 1862, left some of the construction contracts on our enlarged canals not fully completed, and consequently there are points upon the line of the Erie where a further outlay of money will be required to render the depth of water uniform on the whole line. No beneficial results to navigation can be obtained where the capacity for draft of water at one point of the line is six feet, and at other points only five feet and six inches.

The line of draft on all our enlarged public works should be uniform. Such was the intention and object of the laws authorizing their construction, and will not now be lost sight of.

It is understood that the Auditor's financial report will show a remainder of canal receipts for the last fiscal year after setting aside the sums charged upon them for the various constitutional sinking funds, which is subject to appropriation by the Legislature, to such objects as may be deemed expedient.

I would therefore respectfully suggest an early appropriation of so much of this remainder as may be found proper to be expended under the direction of the Canal Board in such extraordinary repairs and improvements as the Board may direct.

An appropriation during an early period of the session will probably place funds at the disposal of the Commissioners to perform such work as will be needed before the opening of navigation next spring.

CHAMPLAIN CANAL.

It appears by an examination of the financial reports of the Canal Department, and of the appropriation and payments for the last four fiscal years, on account of this canal, that on the 30th of September, 1862, the appropriation had been overdrawn $4,402.66.

But to state the amount in another form for the two last fiscal years, in reference to appropriation made of the tax of 1860, and collected in 1861 and 1862, it appears that the total receipts for the tax paid into the treasury, on account of this canal, have been $168,552.07, and the payments during the two years have been $113,486.79, leaving an apparent balance of $55,065.28; but if this sum be expended there will be an overpayment of that amount, which added to the above overdraft of $4,402.66, will make a total $59,467.94. The work on the Glens Falls feeder is under contract, and is progressing, and its suspension would now cause serious inconvenience.

In making the appropriation for this canal, proper attention seems not to have been given to the condition of former appropriations, or the state of funds applicable to the improvement of the canal.

The following table, taken from the Auditor's financial report, will more fully show the present state of funds appropriated to the Champlain canal:

Receipts and expenditures on account of the Champlain Canal, since 30th September, 1858.

RECEIPTS FROM	1859.	1860.	1861.	1862.	TOTAL.
Premiums on loans		$2,496 15	$1,076 82	$999 23	$4,572 20
Taxes of 1857	$9,929 21				9,929 21
1859	4,470 21	55,020 08			59,490 29
1860			82,888 31		82,888 31
1861				85,663 76	85,663 76
Advance on tax of 1862				7,692 63	7,692 63
Loan for floating debt		44,963 99		640 00	45,603 99
Miscellaneous		1,863 25		179 50	2,042 75
	$14,399 42	$104,343 47	$83,965 13	$95,175 12	$297,883 14
Appropriations overdrawn 30th Sept., 1862					$4,402 66
Appropriations overdrawn 30th Sept., 1858					$72,038 38
Expended by Canal Commissioners	$8,724 61	$96,749 31	$54,561 13	$64,840 82	$224,875 87
Auditor	2,773 29	180 79	63 33	2,354 14	5,371 55
	$11,497 90	$96,930 10	$54,624 46	$67,194 96	$302,285 80

Expenditures of Tax of 1860 *and* 1861.

	1859.	1860.	1861.	1862.	TOTAL.
Am't realized from taxes					$168,552 07
Expended in 1861				$54,624 46	
1862			$67,194 96		
Less rec'd from tax of 1862		$7,692 63			
Floating Debt Fund		64,000 00	8,332 63	58,862 33	113,486 79
Balance unexpended 30th Sept., 1862					$55,065 28
If this amount is expended add overdraft of 30th Sept., 1862					4,402 66
And the canal account will be overdrawn					$59,467 94

REMOVAL OF THE BENCHES FROM THE CANAL.

I desire to call the attention of the Legislature to the remarks made upon this subject in the last annual report of the Canal Commissioners, and again to urge this work upon the serious consideration of the Legislature.

These benches permit serious and almost continual obstructions to the passage of the deeply laden larger class boats; while they remain as they were constructed no loaded boat drawing six feet of water can approach nearer either bank than nineteen feet. It has, in the crowded condition of the canals, become almost an indispensable necessity that these benches be removed from the short levels, and it would greatly expedite and facilitate navigation if entirely removed on the whole line. On the Eastern division of the Erie canal, which receives all the boats collected from all the canals destined to and from tide water, the capacity of the water-way, three feet from the top water-line, is one-fifth less than the recently completed portions of the same work; consequently when crowds of boats accumulate, and especially near the close of navigation, when every craft afloat is pressing to reach tide water, this limited and confined capacity is seriously felt in dispersing them, and in forcing boats through in season to reach tide water.

Respectfully submitted.

W. I. SKINNER,

Canal Commissioner.

Dated Albany, *December* 10, 1862.

MIDDLE DIVISION.

The Commissioner in charge of the Middle Division respectfully submits the following

REPORT:

(He was elected at the annual election in 1861, for the unexpired term of the late Samuel H. Barnes. His immediate predecessor was the Hon. B. F. Bruce, chosen by the Legislature of 1861, and who served for the year ending December 31st, 1861, embracing three months of the last fiscal year.)

The Middle Division embraces the following canals, viz:

		Miles.
1.	The Erie canal from Higginsville, Oneida county, to the county line between Seneca and Wayne counties, including Limestone, Butternut, and Nine Mile creek feeders, each navigable one mile	71.93
2.	The Oneida Lake canal, including towing-path on Wood creek, six miles, the Oneida feeder, falling into the canal at Durhamville, and navigable one mile	7.
3.	The Oswego canal	38.
4.	Oneida river improvement	20.
5.	Seneca river towing-path	5.75
6.	Seneca river improvement, at Baldwinsville, including three-quarters of a mile of canal slack water navigation, without any towing-path from Baldwinsville to Jack's reef	12.50
7.	Cayuga and Seneca canal	22.77
8.	Cayuga inlet	2.
9.	Crooked Lake canal	8.
10.	Chemung canal	23.
11.	Chemung canal feeder	16.
12.	Chenango canal	97.
	Total	323.95

The Middle Division embraces also, the following reservoirs:

	Areas, acres.	Depth, feet.	Length of feeder, miles.	
Erieville	340	21½	20	
Hatch's lake	134	10	98	to Bradley Brook reservoir.
Eaton brook	254	50	8	
Bradley brook	134	25	3	to Eaton Brook feeder.
Leland pond	173	8	½	
Woodman's lake	148	11	¼	
Madison brook	235	45	2	
Skaneateles	8,320	--	9	
Cazenovia lake	1,778	4½	10	
De Ruyter	626	--	--	

The Erieville reservoir and Cazenovia lake, through the Chittenango creek, are used as feeders of the "Long" or Rome level of the Erie canal, and have hitherto constituted the only considerable sources of supply, during the dry months, for the western portion of this level. To this will be added, when the DE RUYTER RESERVOIR is completed, and before the opening of navigation next spring, a quantity of water estimated at 500,000,000 cubic feet, precisely *when* and *where* it is most needed. In other words, it can be saved without material diminution till the lesser sources of supply have failed, and then be discharged within six miles of the Lodi locks. It contains six hundred and twenty-six acres of water surface, with an average depth of twenty feet, and the feeder from it to the Erie canal is twenty-five miles in length.

A contract for this reservoir (classified as an *enlargement* contract) was made March 29th, 1861. On the 1st of January, 1862, there still remained undone a considerable portion of the earth embankment of the dam, all of the cement masonry in the waste gates and in the bridge abutments and overfalls of the feeder, also the dam and bulkhead on the Tioughnioga river, at the head of the feeder, all of the bridge superstructures spanning the feeder, and much of the standing and fallen timber within the "flow lines."

It was neither practicable nor desirable to accomplish the larger portion of such work during the winter and spring months; hence the contractors made little progress, beyond the delivery and dressing of stone and timber, till the succeeding summer. The last Legislature made no adequate provision for paying current monthly estimates on this class of contracts, but appropriated the sum of $300,000 to pay final estimates. A law was also passed declaring all *enlargement* contracts "*completed*" on the first day of September, 1862.

The contractors for this reservoir insisted on proceeding with their work, waiving monthly payments, and at the above mentioned date demanded a settlement, embracing all the work done and materials delivered—which demand has been complied with.

Immediately after the adjournment of the Legislature, the contractors promised to employ and maintain such a force as would secure this structure against the danger of injury or destruction by floods, and to make it available for the purposes of its construction prior to the time limited for its completion by the law of 1862. They made great efforts and incurred heavy expenses to redeem their promise, but found themselves unable to do so, as they allege, owing to constant enlistments in the army and the unprecedented demand for labor.

This failure left the reservoir in such a condition, inasmuch as the embankment had not been carried up to the waste gates, that the entire dam might be swept away by the spring floods; and it was likewise incapable of receiving and retaining such a supply of water as the experience of the past season has demonstrated to be desirable and necessary on the western end of the long level. Besides, only certain sections of the feeder were completed, and, in the event of a moderate winter, the required contribution of the Tioughnioga river would be lost.

Under these circumstances, while the Commissioner in charge felt constrained, in obedience to the law, to close up all existing *enlargement* contracts, including the contract in question, he deemed it not less his duty to provide for the security and availability of this important work.

In pursuance of this purpose, on the 1st of October last, he entered into a new contract with Charles Nichols, of Syracuse, to perform the remaining work, so far as it may be necessary to afford safety to the dam and secure an adequate supply of water for the requirements of navigation hereafter. The estimated cost of the work to be done under the latter contract is $32,800.

In the construction of this work, so far as it has progressed, no pains have been spared to procure the best materials and perform the work so as to give its banks and mechanical structures that substantial character which its great importance demands, and to provide against the possibility of future failure.

The undersigned has no doubt of the utility of this reservoir, nor that it will fully relieve a want which has seriously impaired navigation since the enlarged canal was brought into use—and more than ever during last season—namely, a larger supply of water at the western terminus of the long level. The drouth of the past summer was severe and protracted to a late period in the fall. To keep up the requisite depth of water on the western portion of the Rome level, it has been found necessary to use great care in feeding, and to provide against waste at every point. These precautions have been only partially successful in securing an uninterrupted movement of boats, loaded in almost every instance when moving east, to the limit allowed by the Canal Board. Extreme low water for some miles east of Lodi locks, it has been observed, has been certain to follow the prevalence of westerly winds for any considerable length of time, while the eastern portion of the level would accumulate more than was required for the purpose of navigation. It is confidently believed that the new source of supply contained in the De Ruyter reservoir, and to pass into the canal at a point farther west than the other large feeders, may in a great measure remedy this evil.

The Skaneateles lake is also used as a feeder of the Erie canal; the other reservoirs embraced in the preceding table are feeders of the Chenango canal.

ERIE CANAL.

Repair Section No. 7.

Thomas Gale, *Contractor*. Philip P. Midler, *Superintendent.*

This section embraces twenty-seven miles of the Erie canal, extending from its junction with the Oneida Lake canal at Higginsville to the Limestone creek feeder; the Oneida creek feeder, two miles in length, navigable from Durhamville to Oneida, a distance of one mile; and the Erieville and Cazenovia lake reservoirs and Chittenango feeder. Total 29 miles.

This section was awarded to the present contractor for five years from the 1st of May, 1861; his annual compensation is $3,490.

The structures are:

2 aqueducts,	23 culverts,
1 wooden lift-lock, (Oneida feeder,)	
3 wooden farm bridges,	5 iron road bridges,
15 wooden road bridges,	

1 guard gate, (Oneida feeder,)
3 waste weirs,
3 feeder dams,
2 guard gates.

The expenses of this section for the fiscal year ending Sept. 30th, 1862, chargeable to "repairs," are given as follows:

By the late Commissioner, under repair contract*	$988 84
" present " " " "	2,748 37
" late " for necessary work not embraced in the repair contract	3,256 43
By the present Commissioner, for similar work	2,763 43
" late " miscellaneous	1,202 32
" present " "	1,155 75
By Archibald Hess, late superintendent of repairs	210 16
Total	$12,325 30

REPAIR SECTION No. 8.

LEWIS SELYE, *Contractor*. **PHILIP P. MIDLER**, *Superintendent*.

This section extends from Limestone creek feeder to lock No. 50, above Geddes, including Limestone and Butternut feeders, each navigable one mile; total 13 miles. The contract price per year paid Mr. Selye was $7,000. His contract expired Sept. 30th, 1862, (with the fiscal year.) The section has been relet for five years from Oct. 1st, 1862, to Charles Nichols for $4,800 per annum.

The structures are:

3 double stone lift locks,
2 aqueducts,
4 culverts,
1 weigh-lock,
1 wooden farm bridge,
3 wooden feeder bridges,
1 wooden tow-path bridge,
9 wooden road bridges,
2 iron tow-path bridges,
7 iron road bridges,
1 iron foot bridge,

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[*] Drafts for *thirteen months'* payments to repair contractors were issued during the year, embracing estimates for September in each of the years '61 and '62; hence the excess in the item of expenditures for repairs under contract over the yearly amount of compensation specified in such contracts respectively.

1 feeder dam,
1 waste weir,
3 lock houses.

The following statement shows the expenditures on this section for repairs during the fiscal year:

By the late Commissioner, under repair contract	$3,033 32
" present " " " "	4,462 47
" late " for necessary work not embraced in the repair contract	629 00
By the present Commissioner for same class of work	765 00
By the late Commissioner, miscellaneous	1,340 64
" present " "	1,155 74
" superintendent of repairs	1,814 90
Total	$10,201 07

REPAIR SECTION No. 9.

CHARLES J. HAYDEN, *Contractor.* PHILIP P. MIDLER, *Sup't.*

This section extends from the foot of lock No. 50 to the east line of Wayne county, embracing the Skaneateles lake and feeder, and the Camillus feeder, navigable one mile; total 35 miles. A contract for keeping this section in repair was entered into with the present contractor on the 1st of May, 1861, and continues five years, with annual compensation of $7,000.

The structures are:

3 double stone lift locks,
6 aqueducts,
2 waste weirs,
6 culverts,
1 wooden change bridge.
11 wooden road bridges,
6 wooden farm bridges,
11 iron road bridges,
1 iron foot bridge,
2 guard gates,
4 feeder dams,
3 receivers.

The amount expended on this section during the year, chargeable to repairs, is as follows:

By the late Commissioner, under repair contract..	$1,983 32
" present " " " " ...	5,512 51
" late " for necessary work not embraced in the repair contract..............	3,119 50
By the present Commissioner, for similar work....	391 00
" late " miscellaneous......	1,289 02
" present " "	1,155 75
" superintendent of repairs..............	801 23
	$14,252 33

OSWEGO CANAL.

Repair Section No. 1.

William Avery, *Contractor.* Elliot Harroun, *Superintendent.*

This section extends from Syracuse to Three River Point, and includes the Seneca river towing path and Baldwinsville canal. Total, 21½ miles.

Up to the 30th of April last, the contract for repairs was held by Henry D. Denison, at an annual compensation of $2,800. The section was relet May 1st, 1862, to the present contractor, for four years and eight months, for $9,000 per annum.

The structures are:

4 stone lift locks,
1 composite lift lock,
1 wooden lift lock,
1 wooden guard lock,
4 composite culverts,
5 iron road bridges,
1 iron change bridge,
11 wooden road bridges,
4 wooden change bridges,
2 floating tow-path bridges,
1 wooden river dam,
3 waste weirs,
4 lock houses,
1 State shop.

The expenditures for the fiscal year, chargeable to "repairs," are as follows:

By the late Commissioner, under repair contract..	$793 32
By the present do do do ..	4,400 86

By the late Commissioner, for necessary work not embraced in the repair contract	$594 99
By the present Commissioner, for similar work[*]	28,815 00
By the late Commissioner, miscellaneous	559 26
By the present do do	1,886 38
By the superintendent of repairs	1,876 11
	$38,925 92

"Mud lock," a minute description of the failure of which was made in the report of last year, has been entirely rebuilt, in a manner which compares favorably with any structure of the kind on any of the enlarged canals. The materials for this lock, the most of which were necessarily delivered before the close of navigation in 1861, were procured by an arrangement with the late Commissioner. Early in the winter, a formal contract for its construction was concluded by the Board of Commissioners with Henry D. Denison. The work, superintended by Thos. Gale, was conducted with such industry and vigor that, during the suspension of navigation, the old structure was removed, a permanent pile foundation was made, and the new structure completed in time to pass boats on the first day of the opening. The total cost of this work will be about $39,000, of which $28,815 was paid in the last fiscal year.

A short distance above this lock, there has also been built a stone waste weir, the necessity for which, to regulate the Liverpool level, was suggested in the last report. The cost is about $2,800, being the amount authorized by the Canal Board.

The dam at Baldwinsville has been put in repair during the last summer. It is now believed to be comparatively in a good and safe condition; nevertheless, like all old wooden dams, it is constantly settling or wearing away. The additional cost for the work done on this dam during the last summer is about $2,000.

SECTION No. 2.

CHARLES E. CASE, *Contractor.* ELLIOT HARROUN, *Superintendent.*

This section extends from Three River Point to Oswego, including the Oneida river improvement (43 miles). For the three years preceding the 1st of February, 1862, a repair contract existed with Stinson Ostrander, at an annual compensation of $12,899. The section was relet, commencing May 1st, 1862, to the present contractor, at $11,900 per annum. This contract expires December 31st, 1866.

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[*] For "taking up, piling and rebuilding 'Mud lock.'"

The structures are:

13 stone lift locks,
5 stone guard locks,
2 steamboat lift stone locks, 120x30,
5 wooden waste weirs,
7 wooden road bridges,
2 wooden road and change bridges,
6 wooden change bridges,
1 wooden river tow-path and change bridge,
2 iron road bridges,
2 stone river dams,
7 wooden river dams,
1 aqueduct,
1 bulkhead,
1 draw bridge,
4 composite culverts,
20 lock houses,
1 State shop.

The expenditures on this section for the fiscal year for repairs have been as follows:

By the late Commissioner, under repair contract..	$3,654 72
By the present do do do ..	7,063 08
By the late Commissioner, miscellaneous........	1,118 52
By the present do do	1,327 11
By the superintendent of repairs................	9,535 22
	$22,698 65

The berm vertical wall above lock No. 17, at Oswego, 22 feet high, has a waste over the top 103 feet in length. Owing to the great fall of water, and accumulation of ice during winter, it had from year to year been damaged on its outer or river surface, and undermined at its foundation. On the thawing of the overhanging ice last spring, this wall was found to have been injured to such an extent as to require thorough repair during the low water of summer. At the opening last spring, there being then no repair contract in force on this section, the superintendent commenced preparations for this repair. The work has been continued by the repair contractor, but it will not be finished until next season. The estimated cost of this work is $6,600, and about $3,000 have been already expended on it.

An extra expenditure of $335.58 has been made for a waste weir, on the short level between locks Nos. 9 and 10, at Fulton. The tow-path, for a short distance below lock No. 11, never before built to the requisite height, has been raised at an extra cost of $476.42.

An extra crib has also been built on a branch of the river at Horse Shoe dam, to more effectually secure the latter structure against high water. This work is incomplete, but is estimated to cost $1,200.

An extra crib has also been put in below the apron, at the west end of the high dam, to prevent the abutment from becoming undermined; and some rip-rap wall on the other end, to secure the lock embankments, at a cost of $323.28.

The wooden Whipple bridge superstructures—one at Phœnix, and the other at Oswego—have failed and fallen down. They have been replaced with iron cord bridges, at an extra cost not yet ascertained. Another of these bridge superstructures at Van Buren's, near Fulton, has also failed, but has been rebuilt on the old plan.

This plan of a bridge has not proved durable nor really economical, though the first cost is low, and no more of them should be built. It has been found impracticable to exclude the water from the joints, especially at the lower chords, and many of them have become so decayed in three or four years as to be unsafe. Of the various plans in use, in the original construction of the canals, and in the earlier days of the enlargement, there were none which did not remain sound and secure for seven years or more—many of them lasting for twenty years. When iron bridges are not adopted, it is respectfully recommended that the "Beardslee iron chord"—which is indestructible at the point where all wooden bridges finally fail—be substituted.

UNFINISHED WORK FOR THE ENLARGEMENT OF THE OSWEGO CANAL.

Some of the work embraced in the late enlargement contracts is still incomplete. There are about one thousand yards on "sections 24, 25, 26, and part of 27," of cemented clay and gravel and boulders, being dredging on the river level above Fulton. This should be removed before the opening of navigation next spring, as some trouble has occurred on this account during the past season.

The next contract above, ("parts of sections 22 and 23") a canal level a mile long, was very far from being completed on the 1st day of September. The delay was due both to the extraordinary hardness of the excavation, and the difficulty of getting an adequate force of men. The contractor (Thomas Gale, assignee,) is pushing on the work to completion, without, however, any directions or recognition from the Commissioner in charge, who has uniformly refused to order any enlargement work left incomplete at the above mentioned date.

By a concurrent resolution of the Senate and Assembly last winter, the Canal Board was requested to so regulate the Phœnix dam as to maintain *seven* feet of water in the river above, and no more.

Nothing has yet been done in the premises. It is suggested that it may soon become necessary to rebuild all of the remaining wooden dams on the Oswego river, as they have now stood for more than thirty-five years. They are annually reduced from half an inch to an inch, through the abrasion or decay of the timber. As they are all indispensable to the maintenance of navigation on this important canal, true economy would probably be best consulted in rebuilding them of stone at the earliest period that the financial condition of the State will warrant the expenditure. The dam at Phœnix is among the poorest on the river; and it is respectfully suggested whether, in regulating it, a stone structure should not be adopted, as cutting away the old dams may seriously impair its strength.

Weigh Lock at Oswego.

The recommendation of the late Commissioner for the construction of a weigh lock at Oswego, is respectfully endorsed. The experience of the past year has afforded much additional evidence of the necessity of this structure. Its utility would by no means be confined to the Oswego canal, for it would relieve the pressure at the Syracuse weigh lock, and greatly facilitate the passage of boats at that difficult point. But half the time is consumed in passing boats through the lift lock which is necessarily occupied in getting them through the weigh lock. This fact has, during the past season, frequently created much confusion and detention at Syracuse; and especially has this difficulty been increased when the Rochester weigh lock was out of repair, or unable to weigh on account of high water—occurrences which frequently happen.

The estimated cost of this improvement—so locating the lock as to make it one of a tier of double locks—is as follows:

Cost of lock proper	$26,000 00
do the building	8,500 00
do scales	4,500 00
Total	$39,000 00

CAYUGA AND SENECA CANAL.

GEORGE M. CASE, *Contractor*. **PHILIP P. MIDLER**, *Superintendent*.

This canal extends from the Erie, at Montezuma, to Seneca lake, at Geneva, with a branch from lock No. 9 to East Cayuga, at the foot of Cayuga lake. Total miles in length, 23.

A contract for the repairs of this canal was entered into with John Ecker, June 1, 1861, to extend four years from that date; price per annum, $4,490. In consequence of the refusal or neglect of the contractor to perform the work required of him by the terms of his contract, (as certified by the resident engineer and the superintendent of repairs in charge) his contract was declared abandoned, April 7, 1862. The repairs were relet under contract commencing July 1, 1862, to the present contractor, at an annual compensation of $9,950, and for a period of four years and six months.

The structures are:

11 composite lift locks,
1 side lock at Seneca Falls,
9 culverts,
1 pier at foot of Cayuga lake,
1 pier at foot of Seneca lake,
7 iron bridges,
15 wood bridges,
5 dams.

The expenditures on this canal for repairs, during the fiscal year, have been as follows:

By the late Commissioner, under the repair contract	$1,272 16
present do do do	2,750 45
late Commissioner, for necessary work not embraced in the repair contract	940 88
superintendent of repairs	15,606 86

By the late Commissioner, miscellaneous	$310 95
present do do	1,886 26
	$22,767 56

The locks on which this heavy expenditure by the superintendent was necessarily incurred, are built on the "composite" plan. Nearly all the work paid for in the item of $15,606.89, as before stated, was embraced in the repair contract of John Ecker, under a special notice attached to and forming part of his contract. Though not excepted in terms, portions of the repairs on the lower lock, at Seneca Falls, (lock No. 7,) were not fairly included in the work which he had undertaken to perform, for this lock was originally constructed too narrow to pass boats of the enlarged size, when loaded down to "regulation" depth.

The river level coming up to this lock, involved an extra expense of coffer dams, and at the time of the alterations and repairs was unusually high—requiring the constant employment of three engines to pump out the pit, in order to do the work of taking up, relaying and chiseling down masonry behind the wood work.

On the 7th day of April last, this contract was declared abandoned by the Contracting Board, leaving in the treasury $4,000 deposited by the contractor as security by the terms of the letting; also $505.08 of per centage retained, and $374.16, being the amount of the monthly rate for March. These sums being deducted from the aggregate expenditure, leaves $10,727.62 paid by the State, mostly for repairing and partially rebuilding these locks preparatory to the opening of navigation.

These repairs were mainly on locks Nos. 1, 5, 6 and 7, which proved on examination to be so far decayed in the wood work of the chambers and portions of the gates, that they were utterly unfit for further use. The stone walls in rear of the wood work were laid up, or rather *thrown in* dry, without enough of form and solidity in some cases to hold the horizontal anchors to secure the upright posts of wood. Thus when the locks were emptied, the water, with a head corresponding with the lift thereof, passed through a pile of loose stone, and was constantly detaching the plank lining from the posts, as in the case of the breach in lock No. 6 after the opening of navigation. The walls of the chambers pressed in to such an extent that it was necessary to take up and relay them in concrete.

All of these locks had to be bailed out at a heavy outlay for steam pumps, hence the work in question proved much more difficult and expensive than had been anticipated by the Commissioner in charge or the division engineer, who assisted the superintendent, and gave to the matter much of their personal attention.

It seems one of the most unaccountable and unfortunate errors which has occurred in the progress of the enlargement, that such an objectionable and expensive plan should have been adopted as this of "composite locks," instead of indestructible stone locks, and at a point within one to three miles (by water as well as land carriage) of the cheapest and best blue limestone quarries in the State.

The sum of $1,405 was expended in repairs to the towing path, which had been much damaged by high water in the spring of 1861.

The work of dredging out bars in the canal and lake harbor at Geneva was performed at a cost of $853.

CHEMUNG CANAL AND FEEDER.

JAMES BELLOWS, *Contractor*, by JARVIS LORD, *Assignee*.

OLIVER ALLEN, *Superintendent*.

This canal extends from the head of Seneca lake, at Watkins, to Elmira, including the feeder from Horseheads to Knoxville, making a total distance of 39 miles of navigable canal. Under the contract of T. W. Amesbury, (which expired January 31st, 1862,) his compensation for repairs was $13,475 per annum. The canal was relet, and a contract entered into with James Bellows, commencing April 1st, 1862, and which expires December 31st, 1866. Price per annum, $15,960.

The structures are:

2 composite locks,
13 timber locks,
1 timber guard lock,
38 old timber locks,
4 aqueducts,
13 waste weirs,
2 culverts,
1 dam and bulkhead,

3 road bridges, iron,
35 road bridges, wood,
14 farm bridges,
1 towing path bridge, wood.
1 towing path bridge across Chemung river.

The expenditures on this canal for the fiscal year have been as follows:

By the late Commissioner, under repair contract	$3,817 92
do present do do do	9,758 73
do late Commissioner, for necessary work, not embraced in the repair contract	14,190 00
do present Commissioner, for similar work	62,089 69
do superintendent of repairs	9,744 72
do late Commissioner, miscellaneous	5,239 69
do present do do	2,699 90
Total	$104,840 65

REBUILDING OF LOCKS.

During the year 1861, a contract was entered into by Commissioners Bruce and Gardner with C. C. Barker, (then in charge of the repairs of this canal,) to rebuild ten of the wooden locks before the opening of navigation in the spring of 1862. A plan was adopted so entirely different from the former plan, that only portions of the old foundations were available for the new structures. The work of removing the old locks and procuring materials for the new ones had progressed so far when the present Commissioner was placed in charge, that there was no opportunity to make any changes, if any should be deemed expedient, with a view to reduce the expenditure about to be made. It was ascertained, however, that there was no decayed timber below the water lines, and the foundations were good except of the feeder lock.

It will probably not be wise nor necessary, in reconstructing other locks on this canal, to incur any expense in the foundations or below the water lines, except where it may be found that the walls are so far pressed inward as not to give the necessary width of chamber. It is believed, however, that not more than one or two of the locks which it is proposed to rebuild during the coming winter are in this condition, and possibly none of them.

CHENANGO CANAL.

This canal extends from the Erie canal to the Susquehanna river at Binghamtom—97 miles. It comprises three repair sections, as follows:

Section No. 1.

Alonzo Peck & Co., *Contractors.* Charles H. Smith, *Sup't.*

Contract expires five years from May 1, 1861. Contract price per annum, $13,990.

Section extends from the junction of the Chenango and Erie canals, in the city of Utica, to the foot of lock No. 81, one mile south of the village of Hamilton, 31 miles. The following reservoirs are located upon this section: Madison brook, Woodman's pond, Leland's pond, Bradley's brook, Hatch's lake, and Eaton's brook, all of which are in the southern part of Madison county. Connected with the section are 13¾ miles of feeders. Total miles, canal and feeders, 44¾ miles.

The structures are:

77 composite lift locks,
4 stone lift locks,
4 wooden trunk aqueducts,
1 stone arch culvert,
1 guard lock.
12 arch culverts,
7 box culverts,
9 waste weirs,
3 iron bridges,
44 wood bridges,
30 bridges on feeders.

The expenditures upon this section for the last fiscal year have been as follows:

By the late Commissioner, under repair contract..	$3,963 80
" present Commissioner, under repair contract	11,017 11
" late Commissioner, for necessary work not embraced in the repair contract..............	1,238 80
By the late Commissioner, miscellaneous.........	24 31
" present Commissioner, miscellaneous......	62 00
" By the superintendent, including his salary	636 32
	$16,942 34

SECTION No. 2.

JOHN P. SMITH, *Contractor.* P. H. TERHUNE, *Superintendent.*

Contract expires five years from October 1st, 1860. Contract price per annum, $5,600.

The section extends from the foot of lock No. 81 to and including the first farm bridge above lock No. 100 : distance, 34 miles.

The structures are :

18 composite lift locks,
8 wooden trunk aqueducts,
6 waste weirs,
9 bridges on feeders,
3 iron bridges,
60 wooden bridges,
13 arch culverts.

There are six feeders with an aggregate length of four miles, with dams to the length of 1,000 feet.

The expenditures on this section for the fiscal year have been as follows :

By the late Commissioner, under repair contract..	$2,426 64
" present Commissioner, under repair contract	3,569 94
" late Commissioner, for necessary work not embraced in the repair contract...............	2,482 00
By the present Commissioner, for similar work....	10,685 37
" present Commissioner, miscellaneous.....	50 00
" superintendent, including his salary......	320 92
	$19,534 87

SECTION No. 3.

JOSIAH BRINTNALL, *Contractor*, by SNOOK & BEEBE, *Assignees.*
P. H. TERHUNE, *Superintendent.*

The contract expires five years from May 1, 1861. Contract price per annum, $7,000.

The section extends from the first bridge north of lock No. 100 to the junction of the canal with the Chenango and Susquehanna rivers, in the village of Binghamton : distance, 32 miles. The Stratton and Chenango forks feeders are located on this section, the Stratton being about fifty rods in length, with a dam three hundred and fifty feet in length, and having two bridges, one farm, the other towing path. The Chenango forks feeder consists of a dam three hundred and fifty feet in length, with a guard lock, having a towing path bridge across it.

The structures are:

1 stone lift lock,
14 composite lift locks,
1 guard lock,
2 dams,
7 waste weirs,
5 wooden trunk aqueducts,
3 iron bridges,
55 wooden bridges,
10 arch culverts,
1 bridge on feeder.

The supply of water for this canal is from the reservoirs and Chenango river.

The expenditures on this section for the fiscal year have been as follows:

By the late Commissioner, under repair contract..	$2,333 32
" present Commissioner, under repair contract	5,512 51
" present Commissioner, miscellaneous.....	71 02
" superintendent, including his salary......	320 91
	$8,237 76

During the past winter, lock No. 89 on this canal was rebuilt on the old foundations. The chamber walls are composed of sound and durable stone, of large area of bed, laid in cement mortar, but without any dressing. To avoid the contact of boats with the rough surface of these walls, fenders of oak timber are anchored into the walls at intervals of about four feet. The wing walls and recess stone are of dressed masonry. Thus there are no destructible materials in this lock, except in the fenders, gates, and wooden hollow quoins; and it was rebuilt at an expense of only $5,043.94.

It is believed that a still further improvement and reduction in cost of this plan would be found, in dispensing with all dressed masonry and curved wings. Locks constructed in this manner and of such materials will cost much less than the old style of "composite" locks, and be quite as good for all practical purposes as locks of dressed stone.

CROOKED LAKE CANAL,

Homer W. Randall, *Contractor*, by **Farley Holmes**, *Assignee*.
Oliver Allen, *Superintendent*.

This canal extends from Crooked lake, near Penn Yan, to Seneca lake, at Dresden—distance 8 miles. Contract price per annum $3,869; expires five years from October 1, 1860.

The structures on this canal are:

27 lift locks,
1 guard lock,
6 waste weirs,
2 culverts,
14 bridges,
4 dams

The expenditures for repairs during the fiscal year have been as follows:

By the late Commissioner, under repair contract....	$1,402 50
By the present Commissioner, under repair contract.	2,466 44
By the present Commissioner for necessary work not embraced in the contract....................	823 44
By the superintendent of repairs..................	2,395 61
	$7,087 99

ONEIDA LAKE CANAL.

William R. Chapman, *Contractor*. **Elliot Harroun**, *Sup't*.

This canal connects the Erie canal with the waters of Oneida lake, furnishing thirty miles of lake navigation, intersecting the Oneida river improvement, which forms a junction with the Oswego canal at Three-river Point. The Oneida Lake canal, proper, is six miles in length, and extends from the Erie at Higginsville, to the head of Oneida lake.

Contract price per annum, $2,375. Contract expires September 30, 1865.

The structures are:

7 wooden lift locks,
2 culverts,
1 towing-path bridge,
2 road bridges,
3 lock houses,
4 watch houses,
1 collector's office.

The expenditures for the fiscal year have been as follows:

By the late Commissioner, under repair contract	$1,029 17
By the present Commissioner, under repair contract.	1,514 07
By the superintendent of repair	100 00
	$2,643 24

The Legislature, during the last session, passed a law directing the Commissioners "to cause accurate estimates to be made of the cost of rebuilding the locks of the present dimensions, and also of the cost of constructing the enlarged locks."

These estimates were made for the purpose of ascertaining the relative amounts which should be contributed by the Repair and the General Fund to defray the expense of constructing the enlarged locks. The law, also, provides that "said locks are not to be rebuilt so long as ordinary repairs, above high water mark in the canal, will keep them in good navigable condition."

The act of 1860 (chap. 46), which is amended but not repealed by the law of '62, makes it "the duty of the Canal Commissioners to have such locks constructed of timber of the same dimensions as the enlarged locks on the Erie canal," whenever it shall become necessary to rebuild any of them."

Acting under these laws, it seemed to the undersigned that the only discretionary power possessed by the Canal Commissioners was to determine whether the time had arrived when these locks could no longer "be kept in good navigable condition with ordinary repairs." The Commissioners examined the work in person, and a majority of the Board being of opinion that all of these locks were not only "*not* in good navigable condition, but could not be put in such condition without reconstruction, directed them to be advertised for letting.

Recapitulation of Expenditures.

Erie canal	Section No. 7,	$12,325 30
do	8,	10,201 07
do	9,	14,252 33
Oswego canal	1,	38,925 92
do	2,	22,698 65
Cayuga and Seneca canal		22,767 56
Chemung canal and feeder		104,840 65

Chenango canal	Section No. 1,	$16,942 34
do	2,	19,534 87
do	3,	8,237 76
Crooked Lake canal		7,087 99
Oneida Lake canal		2,643 24
Total		$280,457 68

The aggregate amount paid from the Repair Fund in the last fiscal year, by the present and the late Commissioner, as above exhibited, is		$280,457 68
Which is made up of the following items:		
*For ordinary repairs under contract	$86,475 57	
By present Commissioner on contracts made prior to January 1, 1862, and for work ordered by former Commissioners	106,315 50	
By the late Commissioner for necessary repairs not embraced in contracts, and miscellaneous expenditures	37,536 31	
Miscellaneous payments by present Commissioner of obligations incurred by the Contracting Board of 1861	2,951 54	
By the present Commissioner, for work outside of repair contracts, miscellaneous, &c., for nine months of the last fiscal year	47,178 76	
		$280,457 68

DRAFTS AND CERTIFICATES FOR LAND DAMAGES.

Drafts and certificates for land damages, on awards made by the Canal Appraisers, have been issued during the fiscal year in aggregate amounts as follows:

By B. F. Bruce, late Commissioner, during the three months ending December 31, 1861:

On account of what canal.	Amount.
Erie enlargement	$4,654 00
Oswego enlargement	910 00
Cayuga and Seneca enlargement	640 00
Total	$6,204 00

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*Includes one monthly payment for the fiscal year 1861.

Issued by the present Commissioner from January 1st to September 30, 1862:

On account of what canal.	Amount.
Erie enlargement	$21,236 78
Oswego enlargement	765 06
Total	$22,001 84

By the late Commissioner	$6,204 00
By the present Commissioner	22,001 84
Total	$28,205 84

REPAIRS OF THE CANALS.

The following table shows the names of the repair contractors on the Middle Division, their location and compensation, and the date and continuance of their contracts.

Canal.	Contractor.	No. of section.	Date of contract.	Contract expires.	Compensation per annum.
Erie	Thomas Gale	7	May 1, 1861.	April 30, 1866.	$3,490 00
do	Lewis Seelye	8	Oct. 1, 1859.	Sept. 30, 1862.	7,000 00
do	Charles J. Hayden	9	May 1, 1861.	April 30, 1866.	7,000 00
Oswego	William Avery	1	May 1, 1862.	Dec. 31, 1866.	9,000 00
do	Charles E. Case	2	May 1, 1862.	Dec. 31, 1866.	11,900 00
Cayuga and Seneca	George M. Case	All.	July 1, 1862.	Dec. 31, 1866.	9,950 00
Chemung and feeder	James Bellows	All.	April 1, 1862.	Dec. 31, 1866.	15,960 00
Chenango	A. Peck & Co.	1	May 1, 1862.	April 30, 1866.	13,990 00
do	John P. Smith	2	Oct. 1, 1860.	Sept. 30, 1865.	5,600 00
do	Josiah Brintnall	3	May 1, 1861.	April 30, 1866.	7,000 00
Oneida lake	Wm. R. Chapman	All.	Oct. 1, 1860.	Sept. 30, 1865.	2,375 00
Crooked lake	Homer W. Randall	All.	Oct. 1, 1860.	Sept. 30, 1865.	3,869 00
Total per annum					$97,134 00

Tabular statement showing the estimated cost, amount of work done in fiscal year ending September 30th, 1862, whole amount done, and amount remaining to be done, for repair construction on Middle Division of the New York State Canals.

Character of work.	Estimated cost.	Am't done in 1862.	Whole am't done.	Am't rem. to be done.
ERIE CANAL.				
Repair superintendent, section No. 8 ..	$27,613 96	$5,235 49	$26,415 49	Settled.
Repair superintendent, section No. 9 ..	6,400 00	4,200 00	4,940 00	$1,460 00
Culvert at Canastota..................	2,700 00	680 00	680 00	....
Bridge at Manlius	890 15	890 15	890 15	Settled.
Total	$37,604 11	$11,005 64	$32,925 64	$1,460 00
OSWEGO CANAL.				
Waste weir between locks 9 and 10.....	$335 58	$335 58	$335 58	....
Raising tow-path below lock 11........	476 42	476 42	476 42	....
Removing cemented, sand and gravel and rock, above new bridge..............	750 00	750 00	750 00	....
Repairing broken wall at Oswego	6,600 00	2,400 00	2,400 00	$4,200 00
New crib at High dam	323 28	323 28	323 28	....
New crib at Horse Shoe dam	1,200 00	200 00	200 00	1,000 00
Repairing dam at Baldwinsville........	2,000 00	2,000 00	2,000 00	....
Apron to Brandy brook culvert	950 00	600 00	600 00	350 00
Rebuilding Mud lock...................	41,000 00	41,000 00	41,000 00	....
Dredging channel for boatway around Mud lock	707 00	707 00	707 00	....
Waste weir on Liverpool level	2,800 00	2,800 00	2,800 00	....
Total	$57,142 28	$51,592 28	$51,592 28	$5,550 00
CHENANGO CANAL.				
Repairs, lock No. 9	$5,043 94	$5,043 94	$5,043 94	Settled.
do Sherburne aqueduct...........	12,342 50	6,343 82	17,183 82	Completed
do road bridge at Norwich	1,032 43	1,032 43	1,032 43	Settled.
Total	$18,418 87	$12,420 19	$23,260 19	....
CAYUGA AND SENECA CANALS.				
Excavating outlet of Seneca lake (under act chap. 479, Laws 1857)	$5,500 00	$860 00	$860 00	$4,640 00
Bridge at Evan st., village of Geneva ..	800 00	....	....	800 00
Total	$6,300 00	$860 00	$860 00	$5,440 00
CHEMUNG CANAL.				
Repairs, locks Nos. 19, 27, 31	$20,883 70	....	$20,042 87	Settled.
Repairs, locks Nos. 12, 14, 34, 38, 39, 42, 44, 50, 51, 52....................	88,960 00	$88,694 46	89,214 46	Completed
Repairs, locks Nos. 35, 37, 41.........	18,022 30	....	16,485 32	Settled.
Bridge over Catherine creek...........	1,365 00	1,020 00	1,020 00	$345 00
Repairs of dock at Corning, guard pier at Gibson, and berm docking at head of guard lock at Gibsons.............	3,921 82	3,921 82	3,921 82	Settled.
Total	....	....	....	....

Payments on account of the Enlargement of the Erie, the Oswego, and the Cayuga and Seneca Canals.

The following table shows the aggregate payments during the fiscal year, on account of the enlargement of the Erie, the Oswego, and the Cayuga and Seneca canals.

Enlargement of the Erie.

By the late Commissioner, for sec. work		$1,000 00	
do	De Ruyter reservoirs	14,603 00	
do	Engineering expenses	2,452 62	
do	Land damages	4,654 00	
			$22,709 62
By the present Commiss'er, for sec. work		$23,788 76	
do	De Ruyter reservoir	13,583 00	
do	Engineering expenses	6,948 34	
do	Land damages	21,236 78	
do	Miscellaneous	1,000 28	
			66,557 16
Total			$89,266 78

Enlargement of the Oswego.

By the late Commissioner, for sec. work		$4,172 38	
do	Engineering expenses	1,604 42	
do	Land damages	910 00	
			$6,686 80
By the present Commiss'er, for sec. work		$28,889 64	
do	Engineering expenses	5,989 76	
do	Land damages	765 06	
do	Miscellaneous	578 90	
			36,223 36
Total			$42,910 16

Enlargement of the Cayuga and Seneca.

By the late Commissioner, for sec. work		$5,525 00	
do	Engineering expenses	150 47	
do	Land damages	640 00	
			$6,315 47
By the present Comis'er, for sec. work.		$18,404 66	
do	Engineering expenses	4,569 16	
do	Miscellaneous	326 44	
			23,300 26
Total			$29,615 73

Statement showing the amount paid by draft on the Auditor for engineering expenses on the Middle Division of the canals, during the fiscal year ending September 30th, 1862:

By the late Commissioner:		
For enlargement of the Erie canal	$2,452 67	
do do Oswego canal	1,604 42	
do do Cayuga and Seneca canal	150 47	
		$4,207 56
Repairs of the Chenango	$359 64	
Repairs of the Chemung and feeder	961 02	
Repairs of the Crooked Lake canal	200 00	
		1,520 66
Total by late Commissioner		$5,728 22
By the present Commissioner:		
For enlargement of the Erie canal	$6,948 34	
do do Oswego canal	5,989 76	
do do Cayuga and Seneca canal	4,569 16	
		$17,507 26
Repairs of the Chenango	$2,460 02	
do Chemung and feeder	1,295 27	
		3,755 29
		$21,262 55
By the late Commissioner	$5,728 22	
do present do	21,262 55	
		$26,990 77

REMOVING OBSTRUCTIONS FROM THE SENECA RIVER, AND DRAINING CAYUGA MARSHES.

By chapter 465 of the Laws of 1862, the law of 1858 was amended by appropriating the sum of $25,000 to remove obstructions at the outlet of Cayuga lake and in the channel of Seneca river, but coupled with the condition that no part of this sum should be expended "except on a contract that will insure the entire completion of said work within said additional appropriation."

The Commissioner in charge of the Middle Division, under whose supervision this work came, considered it necessary to a proper understanding of his duties under these provisions, to make a personal examination of the obstruction to the natural flow of the waters of the Seneca river by the enlarged canal, and has continued this examination down the river to Cross lake, and has caused a survey to be made and levels of the river taken, under the directions of M. S. Kimball, engineer, all the way from Cayuga lake to Baldwinsville. A map and profile of the river. giving the result of these examinations, have also been completed. In addition to the surveys thus made, the undersigned has consulted the necessary maps and documents to form an opinion in regard to the whole subject of removing the obstructions caused by the State, and of draining the marsh lands along the river. He feels it due to the subject that a condensed statement of the whole matter should be made to the Legislature, that any future action may be based on a proper knowledge of what is necessary to protect the State from claims to damages for overflowing lands, and to enable it to assess a proper portion of the expenses heretofore incurred in removing bars and obstructions from the river at Jack's reef and other places.

The enlarged canal crosses the Cayuga marshes at Montezuma on an embankment that averages about twelve feet high, and is 15,000 feet long. A description of the locality published in the Canal Commissioner's Report in 1858 (pp. 113 and 114), is as follows:

"The river, where it is crossed by the canal, is divided by Kipp's Island into two channels. Into the west channel empties the Canandaigua river; this channel has been filled up, and to provide for the water that formerly flowed through it, a cut of about one hundred and fifty feet wide has been made across the island above the canal, and all the water thereby carried to the east channel. The west channel by Kipp's Island is commonly called the 'Canandaigua river' down to its junction with the other channel. The east channel is usually known as the 'Seneca river.' The west or Canandaigua channel was deep for its whole length, averaging at low water about sixteen feet. The east or Seneca channel is shallow, averaging in low water less than four feet in depth. The effect of carrying all this water into the east channel (in such times as the marshes are not covered with water so as to allow a free flow over the canal) is to dam it up. So that on the 7th day of November, 1857, there were two feet difference in the level of the surface of the river, above and below the enlarged canal where it crosses the Canandaigua channel. This difference had gradually increased from nine inches on the 7th day of September. By the 14th day of November the freshet was at its greatest height, the water flowing freely over the old canal from the lock near the Canandaigua channel westward, all the way across the marshes, for a depth over the tow path of more than two feet, thus giving a cross section of at least 15,000 feet." *

It is further stated in this connection, that at this time "the water stood two feet and sixteen-hundredths above the under side of the trunk of the aqueduct, (at Montezuma,) with a free passage of 15,000 feet over the marshes."

The completion of the embankment for the canal closed this 15,000 feet of water way, and forced all the water into the east channel and under the aqueduct, and greatly lessened, for all time to come, the space through which the waters of the river must flow. It is manifest that the construction of the enlarged canal across these marshes has materially obstructed the natural flow of the water. In the report before referred to, (page 113,) it is stated that the whole marsh descends from Cayuga lake northward, to and beyond the "direct" railroad bridge, at the rate of five inches to the mile. Though these marshes are covered thickly with flags and other aquatic plants, yet a declivity in the direction of the flow of the water of five inches to the mile must have allowed a vast quantity to pass, when it was from two to three feet deep for the whole width of the marsh, which is not less than 15,000 feet wide.

Whatever may be done in deepening and improving the channel of the river, it is not to be lost sight of that this embankment is a dam at all times of high water when it overflows the banks of the river. These facts were probably well understood when the plan of crossing the marshes by an embankment was adopted, for levels were taken along the river to below Jack's reefs to determine what additional declivity might be given to the stream to increase the rapidity of its flow, and thus compensate for contracting its width and depth at Montezuma.

In the report before referred to, (page 116,) the engineer then in charge of the work of draining the marshes makes the following remarks:

"But for the removal of Jack's reefs and the bars above it, it

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* At this time the embankment of the enlarged canal reached only about half way across the marshes.

is not easy to see how it would have been practicable to prevent the enlarged canal from damming up the river in high water, to the great injury of the lands above, to, and including Ithaca, without very great cost in opening a wide and deep channel as low down the river as Campbell's island. Indeed it may well be questioned whether the obstruction could well be obviated effectually without some reduction of the bars all the way to Jack's reefs."

The whole declivity in the river, before any work was done at Jack's reefs, was from Montezuma to the head of the reefs but three feet and thirty hundredths in low water. The same engineer, in his report for 1856, (see Canal Commissioners' Report for that year, page 159,) says that Jack's reef "is in fact the lower end of Cayuga lake in high water." On the 25th day of April, 1855, the whole fall from Cayuga bridge to Jack's reefs was but 2.99 feet, the distance being twenty-eight miles, giving a declivity of less than eleven hundredths of a foot to the mile. This was before the embankment for the enlarged canal was made, and when no very extraordinary freshet was running in the river.

In 1857, as appears from the Commissioners' Report for 1858, page 112, the quantity of water running in the great freshet of November 15th was 15,269 cubic feet per second, which was fifty per cent. more than had been observed at any time previous, of which we have any record. And it is stated, on the same page, that all previous calculations had been based on 10,000 cubic feet per second as the maximum flow of the river. The same report, page 113, says, "this vast quantity of 15,000 cubic feet per second did not raise Cross lake (which is just above Jack's reef, and through which the river runs,) to old high water mark by one foot and thirty-two hundredths." This proved the value of the work done in cutting away Jack's reefs; and at this very time so much of the embankment of the enlarged canal had not been made as to allow 15,000 feet of water way over the bank of the old canal for the free passage of the freshet; and at this time the water stood 2.16 feet against the sides of the aqueduct at Montezuma.

It is fortunate for the State that the embankment was not then finished, so as to make a dam across the marshes; and it is also fortunate that the work at Jack's reefs was then completed, so as to give four feet additional declivity to the river, thus enabling the water to pass away by a rapid flow.

In 1849, (before the work was done at Jack's reefs,) the Canal Engineers at Montezuma made observations in regard to the rate of subsidence of freshets. The reported result of the greatest subsidence was at the rate of about one and a quarter inches per day. In 1857, this great freshet subsided at the rate of 625.-1000ths, or about 8 inches per day, and in sixteen days it equaled four feet and a quarter, while in 1849, the rate of fall would not give more than a foot and a quarter. (See Commissioners' Report for 1858, page 115.)

The obligation resting on the State to save harmless the owners of lands above the aqueduct appears to have been conceded; and in 1858 a law was passed (chap. 179) directing the Commissioners "to dredge out the channel of the river for a sufficient distance above and below the aqueduct constructed for the purpose of carrying the Erie canal over the Seneca, Canandaigua and Clyde rivers, so as to allow the waters of these rivers *at all times* to pass off without obstruction or impediment, and as readily and as freely as they would naturally do if no improvement for the purposes of the canals were made; and the expense shall be paid out of any money appropriated to the enlargement of the Erie canal."

The work of draining the marshes under chap. 178 of the Laws of 1853, was prosecuted under the direction of the Hon. Henry Fitzhugh, Canal Commissioner, and George Geddes, Esq., Engineer, until the close of 1857, at which time Mr. Fitzhugh's term of office expired, and Mr. Geddes resigned in the following words: "The amount of work remaining to be done does not require the engineering force that has heretofore been necessary; and, having full confidence in the ability of the Assistant Engineer, Mr. Mason Loomis, to execute the work to your entire satisfaction, I hereby offer my resignation." Mr. Loomis was soon after relieved from further connection with the work, and it was placed under the direction of another engineer; and since that time has been prosecuted quite at variance with the plan that had been adopted by Messrs. Fitzhugh and Geddes.

The water was let through the cut at Jack's reefs, on the 21st day of January, 1857. In two weeks the water was reduced four feet in Cross lake—two feet ten inches at the bridge at Musquito Point, and about the same at the "direct" railroad bridge

—as appears by the Commissioners' Report for 1858, (page 111.) This proved the beneficial result of the work, and the soundness of the plan adopted originally; and the report goes on to say, (page 115,) "When Mosquito Point bar and the other bars in the river are removed up to the long bar over which the direct railroad passes, and the four feet that we have reduced the surface is brought up to 'Hard point' bar, the discharge will be freer than it is now, and the freshets will subside more rapidly. The present declivity (in low water of the river) from Montezuma to Hard point may be put at three inches to the mile. When the bars below are removed it will be a foot to the mile."

It would appear from this statement of the facts, that the simple mode of operations that was then demanded, was to commence with the first bar above Jack's reefs and remove it, and then to take the next, and so on, until the work of draining the marshes met the work then in progress below the canal at Montezuma. Had this course been adopted, all the work done for reclaiming the marsh lands would have aided and materially lessened the cost of the work of protecting the lands above the canal from the injurious effects of the embankment. In fact, it would have been doing just what true economy demanded to accomplish both, and each, of the objects aimed at, viz: draining the marshes and guarding against injuries that grow out of construction of the enlarged canal; and this plan must now or sometime hereafter be adopted, or neither of the ends will be attained.

When the surface of the river from Montezuma to Hard point, (which is below the direct railroad, and is more that five miles distant from Montezuma,) shall have a declivity of one foot to the mile, the water will run with such rapidity that a comparatively small channel will carry it, and the velocity will be sufficient to keep open the channel.

For a full statement of the effect on the river, of the work done at Jack's reefs, reference is made to the accompanying report of M. S. Kimball, Engineer, (see Appendix), under whose direction a full survey has been made during the last season; and attention is likewise called to his statement of the manner in which the work has been done on the various bars above Jack's reefs, and above the railroad bridge below the aqueduct, and the effect thereof.

Mr. Kimball has made estimates for completing the work on a plan of cuts sixty feet wide, and on a plan of cuts forty feet wide. For the particulars of these estimates his report is referred to.

It is respectfully recommended that the appropriation of last session be increased from $25,000 to $30,000, and that the restrictions in the act of last winter, as to security, be repealed. With such an appropriation the undersigned would feel at liberty to make cuts forty feet wide through all the bars—the effect of which being observed, would determine the necessity of widening the cuts to sixty feet, or prove that forty feet would be sufficient to accomplish the objects aimed at in the law of last session.

It is believed that cuts of forty feet wide will protect the State from future injuries from the embankment of the enlarged canal; but it may be a question whether to accomplish the work of draining the marshes, will not require cuts of sixty feet wide.

Claims to a heavy amount are already being made for timber destroyed by the raising of the water at Montezuma, and these claims are likely to increase. Thus, it is manifest, that the interests of the State call for the completion of this work at the earliest practicable period.

Experience proves that it is always unwise for the State to inflict injuries on the property of its citizens where it can be avoided at any reasonable cost, for it is certain to be paid for, sooner or later, at rates never less than the real value of the property injured or destroyed, and frequently at a great deal more.

The large sum expended by the State for the purpose of draining the marshes, under chapter 178, Laws of 1853, can none of it be assessed on the owners of the marsh and swamp lands, unless this work is carried to its completion substantially on the plan originally proposed.

In conclusion, the undersigned begs leave to state, as the result of a fair and careful examination of the whole project, and of the relation of the canal to these rivers and to Cayuga lake, that his convictions are clear that the plan of draining these marsh lands and removing these obstructions was wise and necessary in its inception, and would have produced all the beneficial effects claimed, if the money already provided had been judiously expended, and the additional appropriations necessary had not been withheld.

THE PRESENT CONDITION AND WANTS OF THE MIDDLE DIVISION, AND ITS NAVIGATION FOR THE PAST SEASON.

ERIE CANAL.

On the portion of the Erie canal embraced in this Division, navigation has been attended with less interruption than heretofore, while the movement and the tonnage have been largely in excess of any former year. No break has occurred since navigation fairly opened; but there was a breach at May's point while the level was being filled, which somewhat impeded the opening. It was repaired, however, in time to pass all boats commencing their regular trips for the season. It grew out of an old grant to build a dry dock, the expense of this repair was paid by the superintendent—amounting to about $600.

The most serious obstacle to a steady and regular movement of boats has been low water immediately east of Lodi locks, from midsummer well into October. In another portion of this report, the remedy for this detention is pointed out, and is being provided for so far as an additional supply of water is concerned; but this alone will not remove the evil complained of. It will be necessary to reduce the level of the canal bottom for about six miles, to Limestone creek feeder—say one foot at Lodi locks, and running up to six inches cutting at the feeder. The estimated cost of this work, which includes considerable excavation where the canal has never been reduced to bottom, is $6,150. This improvement will also involve the necessity of removing or cutting down the crown of the arch to the Central railroad tunnel at Syracuse. No boats loaded to the regulation depth have been able to pass over this arch without detention, when the water was generally low on the level, or when it was drawn down directly over the tunnel by continued and rapid lockages.

In determining the question whether this work should be done at the expense of the State or of the railroad company, regard should be had to the alleged fact that the elevation of this arch was determined by the Division and Resident Engineers employed on the canal at Syracuse when the structure was built.

Some hindrance and detention has also occurred at the junction of the Erie and Oswego canals. in the city of Syracuse, when *processions* of boats and rafts have come simultaneously from the Western Division and the Oswego, meeting at this point boats bound west. All the relief practicable would be found in the construction of a weigh lock at Oswego, (as recommended in another place,) and in contemplated improvements on the Western Division.

There are no considerable feeders, except the Skaneateles lake and Nine Mile creek, to supply the Jordan, the Syracuse, the Salina and Liverpool, the Port Byron, the Montezuma, and the Cayuga levels, making in all about *sixty miles* of enlarged canals depending on these sources for supply, excepting only the lockages from the Western Division and the Rome level. It has not been found practicable to feed either from the east or west. During the dry months the great reliance has been on the Skaneateles, which has been taxed to its utmost capacity, and cannot always be depended on for an adequate supply for this long distance.

In determining the question of feeders for the western levels enumerated above, the Owasco outlet was suggested when our canals were enlarged, but the large price demanded for the diversion of this stream at Port Byron, (some $86,000,) probably settled the question against its appropriation. It could be used as an auxiliary in feeding the Port Byron, the Montezuma, and the Cayuga levels, and thus relieve the Skaneateles and turn its waters mostly to the east. It is understood that this property, including the race of about two miles in length, can now be purchased for less than one-eighth of the sum formerly demanded. The race could be put in order, the bulkhead rebuilt, and a new feeder brought in at Port Byron, (above the lock,) through iron or cement pipes, for about $12,000. It is respectfully recommended that this improvement be authorized, provided the property can be purchased at this reduced rate.

During the past year, the embankment across the Cayuga marshes has been fully completed. The light and unstable nature of the soil on which it stands has warned the Commissioner and others in charge, of the necessity of the utmost vigilance in providing against any movement or failure of the earthen walls on this portion of the canal, more especially as they cannot be replaced, without ruinous delay, during the season of navigation, and without heavy cost at any time.

In the month of August last, a most alarming sinking of the towing path bank occurred about ten chains west of the aqueduct. For the distance of about five chains, the entire bank seemed suddenly to settle into its frail foundation, leaving scarcely four feet of the remaining bank to hold the water, and this being nearly vertical on its outer slope for six feet in depth. The cavity was promptly filled with proper material, and the toe of the bank secured by the use of brush and stone. Under a construction contract, (now closed,) about 4,700 yards of this material was laid on.

The work is not yet deemed entirely safe; and it is earnestly recommended, in view of the disastrous consequences which must ensue from the failure of any portion of it, it should be horoughly secured, wherever indications of similar weakness are presented. The additional expense of this improvement is estimated at $15,500.

Soon after the opening of navigation, the attention of the Commissioner in charge was called to the dangerous condition of the canal banks crossing the valley of the Brandy brook, a distance of about thirteen chains. This is about thirty miles east of Syracuse, and on the Rome level. The soil on which the banks rest, as well as the material of which they are composed, is exceedingly unreliable and treacherous. Since the enlarged canal was brought into use, and while the depth of water was limited to five feet, a heavy and expensive breach occurred at this point. Slides and sloughing off, daily increasing in magnitude, gave unmistakable indications that another and more serious disaster would interrupt navigation for many days, unless some expedient was promptly adopted to arrest the movement, more especially of the tow path bank. With the canal elevated nearly thirty feet above the surrounding country — a level of sixty miles in length, the water seven feet in depth — with no stop gates or ready made dams within twenty miles of this point, and with a culvert under the banks containing nearly 800 cubic yards of masonry, which would be partially or entirely destroyed by the breach, the Commissioner in charge deemed it hardly worth while to discuss the question of power to make the necessary expenditures to avert such a danger. The plan adopted was the putting in of piles driven down to near the surface of the ground, at the toe of the bank, in the rear of which was placed plank and timber, all making a base, from which was carried up gravel lining to the outside angle. It is believed that this plan affords good security against immediate danger; but it is recommended that this security shall be made perfect by adding a quantity of brush and stone, to receive the drainage. The cost of the piles and graveling is $2,373.79, and the estimated cost of the brush and stone is $504.

The inconveniences resulting from bench walls, though probably less felt than on the Eastern Division, are sufficient to make it very desirable that these obstructions should be removed as rapidly as the means therefor can be spared.

Though our enlarged canals have been declared "completed," their full capacity has not been tested. The maximum draft of boats is yet limited by the Canal Board to three inches (equal to 15 tons) less than was originally designed, and less than can be easily attained. With the coming season they should be placed in condition to realize their full value.

In order to secure the additional draft for boats at the opening of another season, as well as to attain greater safety to those parts of this valuable property which are liable to fail, it is respectfully recommended that a sufficient sum should be appropriated, as an extraordinary repair fund, to strengthen and perfect all of the banks and mechanical structures which indicate any weakness, or where there can be detected any want of stability or danger to navigation. Another important advantage from a moderate and judicious expenditure for these purposes will be found in making more distinct and specific the obligations of repair contractors. To prevent interminable disputes, and rid the State of questionable claims, the enlargement should be *really*, as well as *legally*, "completed," with such cheapening and modification of the plans, of course, as experience has proven to be judicious.

OSWEGO CANAL.

The navigation on this canal has continued without the slightest interruption throughout the season. With the exception of the old wooden dams and the construction of a weigh lock, alluded to in another part of this report, it needs no heavy outlay or expensive improvement. The most desirable is the erection of new lock houses. In rebuilding and enlarging the locks their locations were generally changed. The lock houses were old and not worth removing to the new sites. The consequence is that the lock tenders are generally compelled to live at a distance from their business, or to inhabit such shanties as they can afford to build. This is exceedingly detrimental to the proper and careful management of the locks. There are twenty-two of these structures necessary, which could be built at an expense of $750 each, or $16,500 in all.

BALDWINSVILLE CANAL.

An examination of this canal, made early in the summer, satisfied the Commissioner in charge that but little further use of it could be made for the purposes of navigation, until the lock was rebuilt and the channel below the lock excavated. On referring the matter to the Board of Commissioners, who made a careful investigation as to the facts and the laws relating to this property, it was unanimously decided that this body had no power to expend money or create liabilities for this work, whatever might be its condition. Still it is the property of the State, and should either be disposed of, abandoned, or taken care of. The power "to sell, lease, or otherwise dispose of" this or any other canal, whether built by the State or purchased, being at least questionable, it is presumed it will not be exercised. Nor is it supposed that the State will abandon this or any other portion of its property; and this leaves no alternative but to restore it. In view of these circumstances, the Board passed the following preamble and resolutions:

"*Whereas*, the Baldwinsville canal is no longer in navigable order, in consequence of the dilapidated condition of the lock at Baldwinsville and the changes wrought by the State in the level of Seneca river;

And whereas, said Baldwinsville canal was purchased subsequent to the adoption of the Constitution of 1846, and therefore is not recognized in that instrument as part and parcel of the canals of this State, and is not entitled to be maintained from the Repair Fund, though being the property of the State ought to be maintained and kept in navigable condition, therefore

Resolved, That if the parties interested in the property on the line of said canal, and in its maintenance and navigation, shall make, or cause to be made, at their own expense, the required repairs and improvements for the resumption of its navigation, and said repairs and improvements shall be made within the estimated cost of estimate number four for Baldwinsville canal, submitted to this Board by Morris S. Kimball, Resident Engineer, viz: $19,600, this Board, disclaiming all right and power to create a debt or liability of the State on account of said Baldwinsville canal, will nevertheless recommend to the Legislature, at its next session, that the cost of such repairs and improvements be reimbursed to said parties.

CAYUGA AND SENECA CANAL.

With the exception of the first week of navigation, (the detention growing out of the failure of the old "composite" locks,) the largely increased business of this canal has met with no interruption.

In providing for its enlargement, its connection with the Seneca lake through the upper basin seems to have been overlooked. Under chap. 479, Laws of 1857, the Geneva level and river to Waterloo were excavated to the depth of nine feet; yet the basin, which forms the only entrance to this canal, in many places scarcely contains *four* feet of water. This harbor is formed by a break-water, running about one thousand feet into the lake in an easterly direction. This structure, which had been much neglected, is being thoroughly repaired by the repair contractor. A portion of the work is performed as a part of his yearly contract, and the balance is to be paid for from the appropriation, under a provision of the law of 1862, chap. 458.

To avoid the heavy swell caused by southeast winds, and afford a safe entrance to the harbor for the large fleets which daily enter it, (frequently containing fifty heavily laden boats,) an extension of the pier or break-water of 250 feet, and the removal of all obstructions from the entire area of the basin, will be absolutely necessary. As this lake never freezes, the excavations can as well be done in the winter months as at any other time; and this work should not be delayed in view of the spring business, and the want of the material excavated to complete the bank on the south side of the break-water. It is estimated that this improvement will cost $15,000.

The remaining excavation of the artificial outlet into Seneca river is being made, as required by chap. 479, Laws of 1857.

Much embarrassment is experienced in the management of this canal, arising from the claim of the owners of the water-rights to control and regulate the waters at the Waterloo dam. To avoid this difficulty, while the canal was being enlarged, a contract was made to construct a new stone dam to be owned and controlled by the State, but the work has never been executed.

It is respectfully recommended that the relative rights of the parties be definitely determined, and that undisputed possessic of the present dam be secured to the State, or that a new structure be erected.

ITHACA INLET.

The last Legislature appropriated $2,500 from the General Fund to remove the obstructions to the navigation of the inlet, to raise a bridge over its waters, and to repair the pier at the entrance of the harbor. The removal of the obstructions has been accomplished at an expense of $825. The bridge in question proved to be too much decayed to be raised; hence nothing further has been drawn from this appropriation. Contracts for the delivery of timber to repair the pier have been made, and it is expected that the work will be finished during the coming winter.

Another bridge, built and owned by the State, failed and fell down during the season. There being no appropriation applicable to the expense of rebuilding it, a citizen of Ithaca is constructing a new one, on the principle of Schneider's self-acting draw. The cost will be moderate and the structure substantial and durable. It is respectfully recommended that the required sum be appropriated, when the amount is ascertained, together with such further sum as may be necessary to complete the repairs on the pier.

Chemung Canal and Feeder.

On this canal there has been a very large increase of business in the past season, and the utmost exertions of the superintendent and repair contractor have been necessarily put forth to make it, in its present condition, equal to the heavy demands of its commerce.

Most of the locks being constructed of wood many years ago, have become much dilapidated, and to keep up good navigation through them at all times has been a task of considerable difficulty. In another portion of this report will be found some remarks in reference to the past and the future reconstruction of these locks.

The bad condition of the canal and river banks at Corning, so well and truthfully described in last year's report, remains unchanged, as the last Legislature failed to make any appropriation from which the necessary funds could be procured to afford adequate permanent relief. The banks, docks, etc., might have been restored on the original plan and the expense charged to the ordinary repair fund; but the objection to such an expenditure was that it would have cost quite as much as a better plan, and would be annually liable to the same deterioration. The recommendation of the late Commissioner in charge for a new channel or slip, is endorsed as the cheapest and safest improvement yet suggested.

There are two difficulties relating to the feeder of this canal: first, the incapacity of the present channel to pass the necessary quantity of water whenever there are rapid or continuous lockages; and second, the want of water during the dry months for both the canal and the mills near Corning. It is claimed that the legal rights of the mill owners are yet unsettled and undetermined; but it is suggested that their claims may be terminated, so far as regards the future, by a resort to the Tyrone lakes for an additional supply of water. The expense of making these lakes a reservoir is believed to be moderate, but it is not yet ascertained.

The present feeder should be enlarged at certain points before the opening of navigation next spring. The expense, though not accurately determined, will not exceed $10,000.

A considerable portion of this canal is exposed to severe injury by the sudden and heavy floods of Catharine creek, a stream washing the slopes of the canal banks for many miles. The State has heretofore been subjected to large expense, and the navigators to vexatious delays, from the breaches consequent on the overflow of this rapid stream. Five or six thousand dollars, economically expended, for stone and brush, it is believed would render the banks of the canal comparatively if not positively safe from further injury from this cause. If we judge of the future by the past, this expenditure will save more than $25,000. Hence, the Commissioner in charge ventures to recommend it, on the newly discovered principle in political economy, that "it is easier to pay a large sum than it is to pay a larger one."

CHENANGO CANAL.

The navigation of this canal for the past season has been generally good—the exceptions being caused by a lack of water at the summit level, near Hamilton. The clearing off of the forests has so lessened the supply during early autumn, that an additional reservoir is much needed. Kingsley brook reservoir—the banks of which were broken soon after this canal was constructed, and never repaired—can easily be made available for this purpose. About one hundred acres of the flow land is the property of the State, though it has remained in the quiet possession of its original occupant for more than nineteen years.

The expense of reconstructing this reservoir, with additional flow lands, and some improvement of the feeder, is estimated at $22,170.

It has been decided to rebuild five of the poorest of the locks during the coming winter. All of these structures are so much decayed that it would not be difficult to find scores of them which need renewing almost as much as those selected.

In deciding on the proposed "extension" of this canal it should be regarded as a fixed fact that more than one hundred of these locks must soon be rebuilt, or its navigation entirely abandoned. In reference to the merits of this project, the undersigned has no information beyond what has been placed before the Legislature; but it is suggested that if the State should undertake it, the cost be definitely determined in advance, by letting the work, (to the lowest bidder, as provided by the Constitution,) and paying for it when it is accepted by the State as in every respect complete.

CROOKED LAKE CANAL.

On this canal there has been an uninterrupted navigation for the past season. Like a portion of the Chemung, it is located in a valley, beside a rapid stream, which has frequently injured, and sometimes destroyed, the canal banks. Some further expenditures should be made to avoid, so far as possible, the recurrence of these injuries; but the amount has not been estimated.

The old guard lock at Penn Yan is much impaired by time and use, and should be rebuilt. The cost of such improvement has not been ascertained.

REPAIRS OF THE CANALS BY CONTRACT.

The objections suggested to this system in former reports have not been altogether removed. Though there is no such marked improvement in the management of the repair contracts as would be desirable, the increased labor of the contractors, growing out of the heavy business of the last season on nearly all of the canals, has been performed with few exceptions with promptness and fidelity, and quite economically to the State. It is believed that the prejudice of forwarders and boatmen against the system is gradually lessening, and may be eradicated by a stern determination and resolute action on the part of the State authorities requiring a literal performance of the obligations of the contracts. In any event, the only substitute yet suggested, namely, a return to the wasteful if not corrupt expenditures by superintendents, ought not to be entertained.

It is believed that letting these contracts for the longer term of eight or ten years, would be found beneficial in their management. The contractors would cheerfully make many improvements which they now neglect, and perform much of their work in a more permanent and substantial manner than they are now inclined to do, in view of the probability that their competitors would reap the main advantage of their expenditures.

All of which is respectfully submitted.

WM. W. WRIGHT, *Canal Commissioner.*

APPENDIX.

ENGINEER'S OFFICE,
SYRACUSE, *September* 30, 1862.

HON. W. W. WRIGHT, *Canal Commissioner*:

In obedience to your instructions, I have made an estimate: *First*, of the cost to finish the contract known as the contract for "removing obstructions from the Seneca river," and of the contract for the "draining of the Cayuga marshes;" *Second*, a survey, map, and profile, of the present condition of the whole improvement, together with an estimate of the cost to prosecute and complete the work on the basis of the law, chap. 465, of last winter, which is as follows: "An act to amend an act entitled an act for the removal of obstructions from the outlet of Cayuga lake and the channel of the Seneca river," which act appropriates $25,000 therefor.

I am to presume that this law contemplates the improvement of the river to such an extent as to compensate for the embankment across the marshes at Montezuma, and the cutting off the Clyde river and turning it into the Seneca, above the aqueduct, and no farther.

A description of the river, and condition of the work heretofore done, is as follows:

The river originally had a fall in low water from the surface of Cayuga lake to the pond at Baldwinsville, a distance of 38 miles, of $12\frac{64}{100}$ feet. Upon that portion between the canal at Montezuma (6 miles below the lake), and the pond at Baldwinsville, 32 miles, there was $10\frac{5}{100}$ feet fall.

Upon the completion of the channel at Jack's reefs, nine miles above Baldwinsvile, in 1857, the water was permanently lowered at Cross lake (a small lake lying above and about midway to the first bar), $4\frac{1}{100}$ feet; and at Mosquito point, about half way to Montezuma, $1\frac{54}{100}$ feet; at the central straight line railroad, $\frac{46}{100}$; and at Montezuma, $\frac{8}{100}$ feet.

Hon. George Geddes, with whose levels I now compare my work, and who reported in 1852 that the cutting out of Jack's reefs would lower Cross lake four feet, has been most admirably sustained in the result, as it has been permanently lowered four feet and over. His plan was also to cut through the remaining bars above, 10 in number, to the railroad bridge, channels of 20 feet, except at Hickory island, bar No. 5, 40 feet, and Mosquito point, bar No. 7, 60 and 140 feet. This plan, however, was increased during the progress of the work, making the Weedsport bar, No. 4, 60, and the Mosquito, No. 7, 100 feet, and finally in 1859 the plan of making none less than 60 feet was adopted.

The work as now done and left is substantially as follows:

Bar No. 1, (Skaneateles outlet,) 600 feet long, 60 feet wide, by ten feet deep, nothing done; is probably soft material.

Bar No. 2, (Bonta's bridge,) 1700 x 60 x 10, is doubtless hard; nothing done.

Bar No. 3, (above Bontas,) 500 x 60 x 10; soft; nothing done.

Bar No. 4, (Weedsport bridge,) 800 x 60 x 12; soft; has a completed channel, but has been dug two feet extra depth.

Bar No. 5, (Hickory island,) soft; has a channel dug 2,100 feet x 60 x 13, which is three feet extra depth, and 3,200 feet x 60 x 13 remaining.

Bar No. 6 (New bridge) is supposed to be soft; 1300 x 60 x 10; nothing done.

Bar No. 7 (Mosquito point) is of cemented clay and gravel, very hard, and has been dug 1300 feet x 100 feet wide x 10 feet deep, and 800 feet x 30 wide x 10 deep: there remains 100 x 100 x 10, and 70 x 30 x 10.

Bar No. 8, (Howland's bridge,) probably hard; 400 x 60 x 10; nothing done.

Bar No. 9, (Campbell's island,) dug 1900 feet x 45 x 9 feet, leaving 1900 x 15 x 9: balance of bar 200 feet, partly done; one-third very hard, two-thirds soft.

Bar No. 10, (Railroad bridge,) dug 2,100 feet, and one half the width, or 30 feet, 8 feet deep, and the other half, thirty feet, 5½ feet to "the deep hole," and from "the deep hole" to Campbell's island 1700 x 30 x 8; the remaining 30 feet not done, and the balance, 5,900 x 60 x 8, untouched and soft.

The above is all the work on the contract known as the "Draining the Cayuga marshes."

The condition of the balance, or the contract known as, "For the removal of obstructions from the Seneca River," is as follows:

From Railroad bridge to the mouth of the Canandaigua 5,300 feet x 50 x $6\frac{1}{2}$, and 1100 x 30 x $6\frac{1}{2}$; soft.

From Canandaigua to toll bridge, 5,600 feet, the larger portion 80, and the balance 60 feet wide by 8 feet deep; soft.

From toll bridge to Montezuma aqueduct 3,300 feet, 150 x $7\frac{1}{2}$; soft: also all excavations about and above the aqueduct done.

The question now is, What is the State required to do to compensate for the construction of the enlarged canal across the marshes, at Montezuma, and the shutting off and turning the Clyde river into the Seneca above the aqueduct, or in other words, how wide must cuts be made continuous through the several bars, to accomplish this object alone.

By reference to table A, it will be seen that the levels of Oct. 11th, 1851, taken by Mr. Geddes before the work at Jacks reefs was done, makes the surface of Cross lake $5\frac{84}{100}$ feet below Cayuga lake, and the levels of August 25th, 1862, with Jack's reefs completed, makes it $9\frac{85}{100}$ below, or a lowering of Cross lake of $4\frac{1}{100}$, which exceeds a little the original calculation of Mr. Geddes. This, in my judgment, should inspire the public with confidence in the results Mr. Geddes proposed to attain at all other points above.

Originally, in 1852, estimates were made for cuts 200 feet wide from Cross lake to the mouth of the Canandaigua, but of two feet less depth than those finally adopted, and on which the work has been lately progressing. It was proposed then to not only reduce the surface four feet at Cross lake, but four feet at Mosquito point, and three feet at the foot of Kipp's island, which for all practical purposes may also be called the same at the railroad bridge. This result produced at the "straight line railroad bridge," only three miles below the point in question, (Montezuma,) it must be evident to all reflecting minds, that it not only would have attained the object sought, but much more.

The plan, as finally adopted, and on which the work has been proceeding, was 60 feet wide, but of two feet greater depth, which is not so great a per centage *less* of water way as may at first appear.

Let it be borne in mind that the object to be accomplished upon the plan of the 60 feet cuts, and on the plan lately in progress, was to "*drain the Cayuga marshes*," while the object *now* is to only compensate for the "*obstructions by the State*" at Montezuma

For this purpose then, and it alone, I recommend the adoption of a 40 foot continuous cut through all the bars, as likely to be competent to produce the result. Upon this I present the following estimate, marked B, amounting to $30,000.

For the purpose, however, of reclaiming the marshes, aside from the obligations resting upon the State growing out of the enlargement of the canal obstructing the water way at Montezuma, it may be necessary to widen these cuts to 60 feet, or possibly more, to enable the State to assess the money heretofore expended for redeeming them, but I would recommend a trial of the 40 foot cuts first, and see the effect.

Respectfully submitted.

M. S. KIMBALL, *Assistant Engineer.*

(A.)

Levels of Seneca river from Montezuma to Cross lake, October, 1851, *and August,* 1862:

	Levels.	
	Oct. 11, 1851.*	Aug. 25, 1862.
River at Montezuma aqueduct, below the surface of Cayuga lake	2.59	2.62
River at toll bridge	....	2.82
do opposite mouth of Clyde river	2.82	3.23
do railroad bridge, (direct line)	3.52	3.98
do Hard point	3.99	4.64
do head Campbell's Island reef	4.16	5.18
do foot do do	4.34	5.47
do head Howland's bridge reef	4.34	5.47
do foot do do	4.42	5.75
do lower end of Maple Island	4.44	5.75
do head of Mosquito Point reef	4.52	6.06
do foot do do	4.99	6.64
do head of Hickory Island reef	4.99	6.67
do foot do do	5.40	7.40
do head of bar No. 3	5.52	7.42
do foot do	....	7.58
do head of bar No. 2	....	7.58
do foot do	5.74	9.28
do head of bar No. 1	....	9.28
do foot do	5.80	9.81
Surface of Cross lake	5.84	9.85

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* Taken by Hon. Geo. Geddes.

(B.)

Estimated cost at contract prices of a channel 40 feet wide through all the bars from Jack's Reefs to Montezuma; also to complete on plan as increased in course of construction.

Location of bar.	As increased in course of construction.						To complete channel 40 feet wide.			
	No. of bar.	Length of bar	Size of cut.	Cont. price.	Cubic yards.	Amounts.	Length of bar.	Size of cut.	Cub. yards.	Amounts.
Skaneateles outlet	1	600	60x10	26	3,000	$800	600	40x10	2,000	$520
Bonta's bridge	2	1,700	60x10	26	10,000	2,600	1,700	40x10	7,000	1,820
Above Bonta's	3	500	60x10	26	3,000	780	500	40x10	2,400	624
Weedsport bridge	4	800	60x12	26	....	....	800	60x12	....	....
Hickory Island	5	5,100	60x13	20	26,720	5,344	3,900	40x10	8,000	1,600
New Bridge	6	1,300	60x10	26	3,500	910	1,300	40x10	1,800	468
Mosquito point	7	2,200	100x10	15	13,182	1,977	2,200	100x10	13,200	1,980
Howland's bridge	8	400	60x10	26	3,000	780	400	40x10	2,500	650
Campbell's Island	9	2,100	60x 9	26	8,393	2,182	2,100	40x 9	2,500	650
Railroad bridge	10	9,700	60x 8	26	70,736	18,391	9,700	40x 8	56,000	14,560
Railroad to Clyde river	....	6,400	100x 8	13	104,681	13,609	6,400	50x 8	30,000	3,900
Clyde river to toll bridge	....	5,610	150x 8	13	76,098	9,892	....	....	....	....
Toll bridge to aqueduct	....	3,300	150x 7½	13	13,991	1,819	....	....	....	....
Replacing old bridges	....	....	....	....	....	500	....	....	....	400
						$59,584				$27,172
Add for contingencies						2,416				2,828
						$62,000				$30,000

For this purpose then, and it alone, I recommend the adoption of a 40 foot continuous cut through all the bars, as likely to be competent to produce the result. Upon this I present the following estimate, marked B, amounting to $30,000.

For the purpose, however, of reclaiming the marshes, aside from the obligations resting upon the State growing out of the enlargement of the canal obstructing the water way at Montezuma, it may be necessary to widen these cuts to 60 feet, or possibly more, to enable the State to assess the money heretofore expended for redeeming them, but I would recommend a trial of the 40 foot cuts first, and see the effect.

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do head of bar No. 1	....	9.28
do foot do	5.80	9.81
Surface of Cross lake	5.84	9.85

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* Taken by Hon. Geo. Geddes.

9 timber farm bridges,
3 waste weirs,
3 composite culverts,
19 stone culverts,
1 discharge culvert,
10 stone locks, of which 8 are single,
2 aqueducts,
4 lock houses,
9 watch houses,
1 work shop, at Palmyra.

The following shows the depth, in feet, of water at the time of measurement, at the several points named upon the section, as reported by Superintendent Moore, for the several months of navigation of 1862:

	June.		July.		Aug.		Sept.	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.
4,000 feet below lock No. 56	6	1	----		----		5	11
2,500 do do	----		----		----		6	1
2,000 do do	6	2	----		----		6	3
1,000 do do	6	7	----		----		6	4
Lower mitre sill lock 56	6	4	6	5	6	5	6	6
do do 57	6	10	7	1	6	9	6	11
do do 58	7	1	7	0	7	0	7	2
Mud creek aqueduct	6	10	6	10	6	10	7	3
Lower mitre sill lock 59	7	5	6	10	6	8	7	0
do do 60	6	5	6	8	7	0	6	10
do do 61	6	10	----		6	10	7	2
do do 62	7	0	----		7	4	7	1
Palmyra aqueduct	7	0	6	11	7	1	7	2
Lower mitre sill lock 63	6	9	7	1	6	9	7	3
do do 64	6	11	6	11	7	1	7	4

The superintendent reports detention to navigation upon the section to 1st of October, fifty-four hours; of which twenty-nine hours were consumed in repairing lock gates and mitre sill; twelve hours in raising sunken boat at lock 59; and three hours in removing wedge of boats and a raft in Palmyra aqueduct.

Boats are often detained at the locks by reason of their being single, and unable to pass with equal rapidity the boats locked to them from the double locks below.

There have been no breaches upon the section.

Payments for repairs have been as follows:

To repair contractor, for his annual compensation	$7,433 25
To same, for repairs not embraced in his contract and certified to by division engineer	404 15
To paid same for rebuilding road bridge, in 1861, at the county line between Wayne and Seneca counties	153 50
To paid for snubbing posts and setting same	448 85
	$8,439 75

REPAIR SECTION No. 11.

This repair section is thirty-eight miles long, and extends from the east line of Monroe county to the west line of construction section No. 284, at the village of Brockport.

The section is under contract to be kept in repair by Chauncey Dodge, assignee of Myron H. Mills, the original contractor, for three years from the 1st of October, 1859, for the annual compensation of $8,280.

The following mechanical structures are upon this section:

6 lift locks,
1 guard lock,
1 weigh lock,
2 stop gates,
1 aqueduct,
6 waste weirs,
41 culverts,
2 wooden farm bridges,
13 wooden road bridges,
22 iron road bridges,
3 wooden tow path bridges,
1 iron tow path bridge,
4 lock houses,
1 work shop,
5 watch houses,
1 dam.

The following table shows the depth in feet of the water upon the section, at the points named, as reported by Superintendent Moore:

	June.		July.		Aug.		Sept.	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.
Lower mitre sill, lock No. 65	7	4	7	6	7	0	7	2
do do 66	7	0	7	1	6	10	6	10¼
do do 67	6	9	6	10	6	9	6	7
do do 68	6	11	7	4	7	0	6	11
do do 69	7	3	6	11	7	4	7	2
Rochester aqueduct	7	0¼	7	0½	7	1	7	2
Adams basin	7	3	7	4	7	3	7	3
East bridge, Brockport	......		7	0	7	0	7	2

The superintendent reports total amount of detention on this section, twenty-six and one-half hours, all occasioned by accidents and necessary repairs to lock gates.

The locks on this section are all single, and it is a common occurrence for boats to be detained, waiting for lockage. At the time of the Knowlesville break, boats were detained without any movement eight days. No definite statement of the time lost during the season can be given, because, with the exception of the eight days before mentioned, boats have been constantly moving, although very slowly.

On sections 10 and 11, it has been necessary heretofore to stop locking boats, for the purpose of keeping up the levels below, by feeding through the locks. This detention has been obviated, by constructing sluices around locks where there were none, and by increasing the capacity of others.

The cost of keeping this section in repair for the nine months ending Oct. 1, is as follows:

To paid repair contractor for his annual compensation	$6,520 50
To paid same for repairs not embraced in his contract, and certified to by division engineer	2,936 47
Paid for snubbing posts and setting same	432 30
Paid for cutting down breast walls of waste weir at Brockport	58 04
	$9,947 31

REPAIR SECTION No. 12.

This repair section is thirty miles long, and extends from the west end of construction section No. 284, at Brockport, to the west line of the county of Orleans.

This section had been under the charge of Lewis M. Loss, repair contractor, until the 3d day of February. At that date his contract was declared abandoned by the Contracting Board; a new contract was entered into with Edward A. Mills, for four and three-quarter years, from April 1st, 1862, for the annual compensation of $6,700. The section during the interregnum was under the charge of the superintendent.

The following are the mechanical structures upon the section:

7 waste weirs,
43 culverts,
20 road wood bridges,
1 aqueduct,
1 bulkhead, for feeder,
11 road iron bridges,
3 farm wood bridges,
1 dam, for feeder.

The following table shows the depth of water on the section, as reported by Superintendent Shelley, at the points and at the times of the measurement in the months stated, at

	May.		June.		July.		Aug.		Sept.	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.
Under first bridge west of Shelby basin	7	7	......		......		7	7	......	
do Shelby's basin bridge	......		7	2	7	2	......		7	6
do Ryan's bridge, Medina	7	9	......		......		7	9	7	6
Over Medina culvert	......		......		......		......		6	6
Under Hastings' bridge	......		7	2	6	9	......		6	5
Over road culvert	......		6	3	6	3	......		6	6
do Fish creek culvert	......		7	2	......		......		......	
Under Knowlesville bridge	7	6	7	3	7	3	7	6	7	6
do Eagle harbor bridge	7	1	6	11	6	11	7	1	......	
do Gaines' basin bridge	6	11	......		......		6	11	......	
do Main street bridge, Albion	6	11	7	3	7	3	6	11	7	4
do Braley's bridge	7	9	7	6	7	6	7	9	......	
do Hindsburg bridge	6	11	6	9	6	9	6	11	......	
do Brockville bridge	7	1	......		......		7	1	......	
do Hulberton bridge	7	0	7	0	7	0	7	0	7	6
Over Holley embankment	......		7	0	7	0	......		7	3
At east end of section	7	3	7	6	7	6	7	3	......	

Two breaches occurred on this section. The first was at Knowlesville on the third of August. It was occasioned by the failure of a culvert, which went out, taking with it about one hundred feet in length of the tow-path bank. To make the culvert more secure a change of plan was made, which increased the cost of replacing over the old plan $186.81, which amount was paid to the repair contractor. The detention to navigation at this point was five days.

The second break was in the berm bank about two miles west of Brockport, supposed to have been occasioned by musk rats working in the bank. It occurred on the 6th of September, was repaired at small expense, detention to navigation six hours.

No other detentions reported on the section.

The attention of the Commissioner was early called to the danger of permitting the culverts upon this section to remain in their then condition. The following passage from the last report of Commissioner Gardner properly explains this subject. See Commissioners' report, 1861, page 120:

"Some of the structures upon the canals are badly built; as a class, upon the Western Division, the culverts were the worst built—the plan was defective, as to the mode of timbering and planking bottom of water-way, and in many cases the work of construction was badly done, particularly for the want of thorough puddling, or other guards to prevent leaks from the canal around the culvert walls to their foundations."

"A large proportion of the breaks which have occurred upon the Western Division of the Erie canal have been caused by the failure of these structures; many of them now need overhauling and repairing; they should all be thoroughly examined, and such improvements and repairs made upon them before the opening of navigation next spring, as to secure them against all danger of failure."

The culverts were examined, and those deemed most dangerous were reconstructed or thoroughly repaired. It was intended that all should have been secured, but the very unfavorable winter and spring for the prosecution of such work prevented its accomplishment. The culvert which occasioned the break at Knowlesville was one of the faulty structures, and which had not been repaired during the winter; it was inspected and was believed to be safe, having been built eight years and no difficulty had been experienced with it.

It is highly important that the balance of the culverts should be repaired or reconstructed the coming winter, and thus a source of great vexation and serious damage to navigation and canal interest be removed.

A serious break occurred on this section on the 27th of September, 1861, by the giving way of the berm bank of the old canal, at the village of Holley, resulting, before the breach could be stopped, in the washing out of nearly the whole of the heavy embankment of the old canal across the gorge or ravine at that place. This break is now under repair, and will be completed before the opening of navigation another season. The amount of work done by the contractor to the 1st of October is $13,320.

The breast walls of the waste weirs on this section were found to be from one and three-tenths to ten inches higher than the contemplated level of water in the canal, thus unnecessarily adding additional weight and pressure upon the banks in case of flood. The breast walls have been lowered to the proper line of canal level.

The following payments have been made for repairs on the section:

To paid repair contractor his annual compensation..	$2,343 21
To paid same for repairs not embraced in his contract and certified to by the division engineer ..	1,364 84

To paid (by drafts) for repairing and reconstructing culverts	$15,558 76
To paid (by draft) on account of repairing break at Holley	3,212 00
To paid for repairs, charged to repair contractor and deducted from his monthly payments	180 37
To paid for strengthening banks with stone and replacing bridges	167 24
Expended by superintendent	2,380 09
Total	$25,206 51

Repair Section No. 13.

This repair section is twenty-six miles long, and extends from the west line of Niagara county, to and including Pickard's bridge, across the Tonawanda creek.

The following are the mechanical structures on the section:

21 culverts,
2 State races,
4 waste weirs,
10 combined stone lift locks,
1 stone guard lock,
14 wood road bridges,
13 iron road bridges,
2 wood farm bridges,
1 iron tow path bridge,
4 wood tow path bridges,
1 wood foot bridge,
1 stop gate.

The following table shows the depth of water on the section, as reported by Superintendent Shelley, at the points and at the time of the measurements, in the months stated:

	May. ft. in.	June. ft. in.	July. ft. in.	Aug. ft. in.	Sept. ft. in.
Under Pickard's bridge	11 0	10 0	11 0	11 0	....
Under change bridge, Pendleton	8 0	....	8 0	8 0	8 0
At mitre sill, Sulphur Spring guard lock	10 0	11 0	10 0	10 0	11 0
Opposite Sulphur Spring House	....	9 0	....	....	....
Under Hawley's bridge	8 0	9 0	8 0	8 0	8 6
do Heacox's do	10 0	10 0	10 0	10 0	9 0
do Hitchin's do	10 0	9 5	10 0	10 0	9 6

	May. ft. in.	June. ft. in.	July. ft. in.	Aug. ft. in.	Sept. ft. in.
At mitre sill lower lock, Lockport	6 8	....	....	6 8	6 8
Under Cady's bridge, Lockport	....	....	....	....	7 8
Under Wakeman's bridge	7 8	7 0	7 0	7 8	....
do Orangeport do	7 6	7 0	7 0	7 6	7 10
do Gasport do	7 6	....	....	7 6	....
do Reynolds' basin bridge	7 5	....	....	7 5	7 6
do Watson's do	7 1	....	....	7 1	....
do Middleport do	7 1	7 2	7 2	7 1	7 6

The superintendent reports detentions as follows:

By the destruction of three lock gates in the berm tier of locks at Lockport, that tier could not be used for forty-eight hours.

Two boats sank at Sulphur Spring guard lock; delayed navigation six hours. A boat sinking at Lockport caused a delay of about eight hours.

The basin of the race around the locks at Lockport was destroyed in the spring of 1861. It was reconstructed in the spring of 1862; but was again carried away.

The expenditures for repairs upon this section are as follows:

Repair contractor, his annual compensation	$7,717 44
To paid same for repairs not embraced in his contract, certified to by the division engineer	55 44
Expended by superintendent	4,329 69
	$12,102 57

Repair Section No. 14.

This repair section is seventeen miles long, and extends from Pickard's bridge across the Tonawanda creek, to the city of Buffalo. The section is under contract to be kept in repair by William H. Douglas, contractor, for three years from the 1st day of March, 1860, for the annual compensation of $14,500.

The following mechanical structures are upon this section:

47 road bridges,
55 farm bridges,
3 culverts,
2 locks,
1 ship lock,
2 foot bridges,

1 stone pier at Black Rock harbor,
1 protection pier, or break-water, for the basin,
1 jetty pier in Erie basin.

The following table shows the depth of water on this section, as found and reported by Superintendent Shelley, at the times of the measurement in the several months stated.

	May.		June.		July.		Aug.		Sept.	
BUFFALO—COMMERCIAL SLIP.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.
Under Canal street bridge	7	8	7	11	8	8	8	2	7	1
do Water do	7	8	7	11	8	8	8	2	7	1
MAIN AND HAMBURGH STREET CANAL.										
Under Lloyd street bridge	10	0	10	3	11	0	10	6	9	5
do Main do	11	6	11	9	12	6	12	0	10	11
do Washington street bridge	10	6	10	9	11	6	11	0	9	11
Opposite Smith's boat yard	8	0	8	3	9	0	8	6	7	5
Under Michigan street bridge	7	8	8	9	9	6	9	0	7	11
do Railroad do	9	6	9	9	10	6	10	0	8	11
do Chicago do	9	0	9	3	10	0	9	6	8	5
do Louisiana do	6	0	6	3	7	0	6	6	5	5
OHIO SLIP.										
Under Perry street bridge	9	0	9	3	10	0	9	6	8	5
do Elk do	9	0	9	3	10	0	9	6	8	5
At entrance to Ohio basin	11	6	11	9	12	6	12	0	10	11
OHIO BASIN.										
East side basin—averages	10	0	10	3	11	0	10	6	9	5
South do do	10	6	10	9	11	6	11	0	9	11
West do do	11	0	11	3	12	0	11	6	10	5
CLARK AND SKINNER SLIP.										
Under Ohio street bridge	4	6	4	9	5	6	5	0	......	
do Elk do	4	0	4	3	5	0	4	6	......	
do Scott do	5	6	6	0	6	9	6	3	......	
do Perry do	5	9	5	9	6	6	6	0	......	
SLIP No. 1, from Erie canal to Erie basin.										
Under tow-path bridge	......		9	3	10	0	9	6	8	5
do Railroad do	......		8	3	9	0	8	6	7	5
do River street bridge	......		8	9	9	6	9	0	7	11
SLIP No. 2, from Erie canal to Erie basin.										
Under tow-path bridge	10	0	10	3	11	0	10	6	9	5
do Railroad do	10	0	10	3	11	0	10	6	9	5
do River street bridge	10	6	10	9	11	6	11	0	9	11
ERIE CANAL.										
Under Commercial street bridge	8	0	8	3	9	0	8	6	7	0
do Evans do	8	0	8	3	9	0	8	6	......	
do Erie do	8	0	8	3	9	0	8	6	6	9
do Genesee do	11	0	11	3	12	0	11	6	9	6
do upper Black Rock bridge	......		11	0	......		......		9	3
Guard lock, mitre sill	13	0	13	0	11	9	11	9	11	0
Under bridge, 6 miles west of Tonawanda	......		9	5	9	6	9	0	8	8
do 4 do do	9	6	9	2	9	6	9	6	9	0
Under change bridge, west of Tonawanda	7	0	......		11	0	10	0	9	0
do Central railroad bridge	11	0	11	0	11	0	9	0	......	
Opposite Ira Bush's	11	0	12	0	11	0	11	0	......	

No detention to navigation has been reported upon this section, except at the guard lock at Black Rock, it being impossible at many times to pass boats through as fast as they arrive.

The Louisiana street bridge at Buffalo has been completed.

A wood bridge, with stone abutments, has been constructed at Hamilton street, Lower Black Rock, having been built in conformity to chapter 272, Laws of 1858, cost $5,138.36.

The amount paid for repairs upon this section is as follows:

To paid repair contractor his annual compensation $11,418.72.

NAVIGATION, CONSTRUCTION AND REPAIRS—ERIE CANAL.

The season of canal navigation to the 1st of October has been the most successful since the inauguration of canals in this State, not only in the increased quantity of property carried in the same time over any preceding year, but in the revenues accruing therefrom, and has been marked by less detention to navigation by casualties than usual.

The importance of keeping this channel in the best possible condition, cannot now be too highly estimated, and every exertion should be made to retain and to accommodate the large traffic depending upon the Erie canal.

The Legislature of this State, at their last session, enacted a law (chapter 169) which provides that the canals "shall be deemed and considered finished and completed," "and no more work shall thereafter be done, or materials procured, under pretence of enlarging and completing said canals," and limiting the powers of the Canal Board in the premises, "except to allow and certify to such works of extraordinary repairs and improvements in a completed canal, &c."

It was undoubtedly the intention of the Legislature that after the passage of the aforesaid act, that all original work should be done as extraordinary repairs, and the necessity or propriety of such to be determined by the Canal Board. Consequently after the 1st of September no more improvements could be made, as the Legislature adjourned without providing means. To retain the present business, to keep the canal in good working order, and to permit boats to draw six feet of water, numerous "extraordinary repairs" must be made.

The time for the bulk of work of this character to be done is during the suspension of navigation, and the short space of time that can be given from the action of the Legislature to the opening of the canal, renders it exceedingly important that no delay should be permitted by your honorable bodies in providing such means as may be deemed expedient.

The Commissioner desires to ask for no improvements that have not been heretofore contemplated, preferring to present those of present need and importance, trusting to another year to provide means for increasing the capacity of the Erie canal and to facilitate the transit of the many boats navigating the same.

The following works are mentioned as being considered highly important, and nearly all proper to be classed as extraordinary repairs.

The accompanying map shows the basins, slips and canals in the city of Buffalo, and the attention of the Legislature is called to the urgent need of placing some of the slips and a portion of the canal in such condition that the numerous boats constantly arriving and departing from the city may have suitable facilities and accommodations.

The western termination of the Erie canal is at its junction with the Commercial and the Main and Hamburgh street slips. The Main and Hamburgh street slip extends in an easterly direction, and is connected with Buffalo harbor by the Prime and the Clark and Skinner slips, and with the Ohio basin by the Ohio slip; that portion of the slip lying east of Ohio slip has never been excavated to canal bottom. To make the slip serviceable, considerable original material must be taken out and the sides docked. This improvement is estimated to cost sixteen thousand dollars.

Prime slip is private property, is narrow, and has become so much filled with deposit as to be unreliable for navigation.

The Clark and Skinner slip was laid out by the city of Buffalo, and was proposed to be transferred to the State. The Canal Board, on the 18th of April, 1843, directed the Commissioner in charge to open and improve said slip at the expense of the State, provided that the Common Council of the city of Buffalo gave a release of the premises thus occupied. The Commissioner proceeded with the improvements without obtaining the releases above noted, and since that time the State has been in possession of said slip, and has expended almost every year since moneys for its maintenance. With a view to increase its capacity, the present Commissioner made a search for the plan upon which said canal was accepted by the State, when it was found that they had no legal control over said slip; and, therefore, no authority to expend money in the premises. Upon this discovery, the city of Buffalo, and parties owning lands adjacent, tendered to the Canal Board full and sufficient releases to the slip, which said Board did not accept—deeming that, under existing laws, they had no power to accept the same, and that legislation must be had by the Legislature. The Commissioner earnestly requests that the Legislature, at an early day, declare said slip a part of the canals of the State.

The depth of water in the slip is in some places not over four feet, and cannot be used except for light boats.

The improvement of the slip is very necessary, as it is difficult and dangerous to pass boats into the harbor through any of the slips during the prevalence of strong westerly winds, except through Commercial slip and the circuitous route of the Ohio basin. Commercial slip is the main thoroughfare, and is almost constantly filled with boats, which at times occasion so great a crowd as to detain them. It is, therefore, considered highly important that the Clark and Skinner slip should now be opened, as it will open another channel to Buffalo harbor, tend to prevent the crowd of boats in Commercial slip, and can be used at all times. The estimated cost of the work is $12,000.

Slips Nos. 1, 2, and 3 connect the Erie canal with the Erie basin. A dam had been constructed across slip No. 3, to prevent wash of sand into the canal. The jetty pier was partly intended to prevent this wash, and has been so far completed as to warrant the opening of the slip. All of the slips are of sufficient depth of water, except those noted.

The Erie canal, between Commercial slip and Erie street bridge, has not been enlarged, and when the water in the lake is driven back by easterly winds, (which is frequently the case,) boats get aground and cannot be moved, until the water returns. This portion of the canal should be deepened, that navigation can be maintained at this important point at all times. Cost $1,500.

The Erie basin breakwater has been completed, in accordance with the plans heretofore determined upon.

The jetty pier is nearly completed; some work was done by the contractor, since the 1st of September, upon his responsibility and without permission or countenance from canal officers. The work done was very necessary to secure the pier from destruction. To complete the pier, coping stones should be placed and bolted firmly down, and loose stones placed in rear to protect it from storms. The estimated cost of completion is $4,000.

The guard lock at Black Rock is single; an additional lock is needed, as boats are frequently lying by waiting for lockage.

It will cost about $35,000 to build an additional guard lock with necessary bulkheads.

A large amount of work was done, last winter and spring, by the contractors, on sections 361, 362, 363, 364, and 365, (between Buffalo and Tonawanda,) but the work was not completed, and under the operation of Laws of 1862, chaps. 165 and 169, the contracts were closed. The engineer estimates that there are 100,000 yards of material to be taken out, and 23,000 yards of slope wall to be built, to complete the sections as originally designed.

This part of the canal, which should be widened and deepened, is the great water way which supplies the enlarged canal with water, to the Montezuma marshes. The volume of water necessarily passed through creates a strong current, which embarrasses the upward movement of boats. If this work is completed the coming winter it is believed that the height of water kept in the canal, from Buffalo to Lockport, can be somewhat reduced, which would be of much importance to the inhabitants residing upon and adjacent to Tonawanda creek, whose lands are now flooded. It would also increase the capacity of the Lockport locks, for by keeping the level at its present height it overflows the lock gates, and floods boats, if too many are attempted to be locked through at a time.

The Commissioner begs earnestly to advise that provision be made for the completion of this portion of the canal, or at least sufficient to remove the earth from the bottom and sides of the canal, as contemplated in the original plan of enlargement. There are no feeders on the Western Division of the Erie canal, but through this channel—the Tonawanda creek and the Medina feeder; the two latter are unreliable and cannot be depended upon for any material service.

Some earth and rock was taken from the prism of the canal last winter, between Lockport and Rochester. Were it not for the unusually unfavorable weather and the difficulty of obtaining laborers, more excavation would have been done. The contractors on most of this line failed to prosecute their work with the requisite vigor, and State forces were put on, by whom the greater portion of the work was done.

The amount remaining to be taken out on the entire line, (excluding that part between Tonawanda and Black Rock and in Buffalo,) is estimated by Engineer Story as follows:

Repair section No.		10	$3,000 00
do	do	11	10,000 00
do	do	12	33,000 00
do	do	13	14,000 00
			$60,000 00

As before suggested, the culverts on section 12 should be put in secure condition. The estimated cost is eighteen thousand dollars. The Genesee River feeder dam should be rebuilt. The superintendent having in charge the Rochester section (No. 11) reported that navigation had been suspended eight days, occasioned by the Knowlesville break. The break was repaired in three days, and light boats passed over the same in less than eighty hours from the date of the accident, but the water had been drawn partially from the lower levels and had to be refilled from Buffalo. Owing to the large number of boats in transit, each acting as part of a dam to obstruct the flow of water, it required nearly ten days to reach the marshes. The superintendent of the section, which includes Knowlesville, reports the detention there at five days, a portion of which was consumed in filling the canal and feeding below.

There is no doubt had the feeder at Rochester been in use several days' navigation could have been saved, and there would have been little delay, except the detention to boats going west from Rochester.

By the plan submitted to and approved by the Canal Board, it is not intended to make the Genesee a permanent feeder, but only to be used in cases of emergency, and when not in use, the dam will not interfere with the ordinary condition of the stream.

The work is important and should not be delayed. The cost of this improvement is estimated at $6,000.

There are fifteen locks between Rochester and Clyde—two of those are double, the rest are single. Knowing that detentions had occurred at those locks in 1861, and anticipating the large business of the present year, preparations were made to place them in good condition prior to the opening of navigation, and

and bolted firmly down, and loose stones placed in rear to protect it from storms. The estimated cost of completion is $4,000.

The guard lock at Black Rock is single; an additional lock is needed, as boats are frequently lying by waiting for lockage.

It will cost about $35,000 to build an additional guard lock with necessary bulkheads.

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Some earth and rock was taken from the prism of the canal last winter, between Lockport and Rochester. Were it not for the unusually unfavorable weather and the difficulty of obtaining laborers, more excavation would have been done. The contractors on most of this line failed to prosecute their work with the requisite vigor, and State forces were put on, by whom the greater portion of the work was done.

and the crowds at the locks, is sufficient to demonstrate this fact.

Received at Buffalo, May, 1862, (in round numbers),	$428,000 00
June, 1862	407,000 00
July, 1862	443,000 00
August, 1862	407,000 00
September, 1862	516,000 00

The receipts in June and July, 1861, were the smallest of that year, being, in June, $231,000; July, $217,000.

It is manifestly the interest of the State to increase the capacity of the canals, to facilitate the passage of boats, which aids not only to retain the present vast volume of property passing through, but provides for a prospective increase.

The large business of the past two years will cause the building of many boats, which, though adding to the tonnage capacity, cannot increase the tons of property carried, because their addition will only increase the pressure at the single locks, and increase the length of time consumed in the passages—thus costing more to the shipper, who seeks redress by adding the increased expense on the property.

Trade cannot be confined to any channel, but seeks that pathway which insures safety, rapidity and economy.

After very careful consideration of this subject—viewing the uniform and *unparalleled* steadiness of the business season, with the reasonable expectation that it will not be again as steady, and knowing the difficulties attending the prosecution of that business—the Commissioner has come to the conclusion *that the capacity of the Erie canal for the transportation of property at single locks has been reached*, and that it is very doubtful if the same quantity can be again passed through.

It is estimated that an additional tier of locks can be built for $412,000, and the guard lock, Black Rock, for $35,000.

It is believed that if the Legislature should, very early in the coming session, authorize the construction, and provide for the payment, the locks can be built, and probably all be brought into use, in the month of September, 1863.

Economy and convenience require that in cities and large villages iron bridges should be substituted when the present wooden structures are worn out. Bridges of this character should be built the coming winter, at the following places: One at Nunda, one at Mount Morris, one on Plymouth avenue, Rochester, two at Buffalo, on Michigan and Elk streets.

Some of these bridges should have been rebuilt, but there being no means to construct them of iron, the authorities in most of the localities preferred to let them remain in their present dilapidated condition rather than to replace them again of wood, hoping that provision might be made at this session of the Legislature for this purpose. The expense of the improvement is not large, as the repair contractors are obliged to rebuild with wood, at their own cost—the State paying only the difference in cost between iron and wooden bridges.

The banks of the canal in places are not sufficiently strong, being narrow, and too low. In many instances they were not completed by the contractors as contemplated. Such work is not embraced in the repair contracts, it being intended that such contracts shall embrace no new or original work. Some work of this kind has been done this year where it was absolutely necessary. A large amount should be done the coming season.

Snubbing posts have been placed on the whole line of the Erie, it being ascertained that great damage was done to the banks, tow path, pavement, docking, and slope walls, by the hooks used in snubbing boats.

A large amount of work has been performed by the repair contractor and other agents, and it is believed that the Western Division of the Erie canal is in better condition than usual.

The following summary of the foregoing recommendations covers all the work considered necessary to obtain six feet draft of water for boats, and to keep the canal in the condition before mentioned in this report:

Main and Hamburgh street slip	$16,000 00
Erie canal, between Commercial slip and Erie street bridge	1,800 00
Clark and Skinner slip	12,000 00
Jetty pier	4,000 00
Guard lock, Black Rock	35,000 00
Bottoming out and completing canal between Tonawanda and Black Rock	100,000 00
Bottoming out through the remainder of the canal	60,000 00
Repairing culverts, sec. 12	18,000 00
Genesee river dam	6,000 00
Iron bridges (Erie canal)	4,000 00
Additional tier locks, 13	412,000 00
Raising, widening, and strengthening banks	20,000 00
Total	$688,800 00

The foregoing estimates are concurred in by the engineer of the Western Division.

GENESEE VALLEY CANAL.

This canal extends from the Erie canal, in the city of Rochester, to the Allegany river, at Milgrove, 113 miles. The Dansville side-cut commences at the Shaker aqueduct, and extends to Dansville, a distance of 11 miles.

For the purposes of superintendence and repairs, it is divided into three sections. Sections 1 and 2 are at present in charge of F. H. Beckwith, having been in charge of D. D. Spencer until May. Section No. 3 is in charge of Gideon Searls.

Repair Section No. 1.

The section is 52 miles long, and extends from the junction of the Genesee Valley canal with the Erie canal at Rochester to the terminus of the Dansville side-cut at Dansville. It is under contract to be kept in repair by William McArthur, for five years from the 1st day of February, 1862, for the annual compensation $8,472.

The mechanical structures upon this section are as follows:

19 lift locks,
3 guard locks,
4 dams,
3 bulkheads,
8 aqueducts,
57 culverts,
15 waste weirs,
44 road bridges,
64 farm bridges,
3 tow path bridges,
11 lock houses.

Immediately after the great flood of September 27th, 1861, the repair contractor upon this section abandoned his contract, and the repairs were commenced by Superintendent Spencer. A large proportion of his expenditures was for replacing the Shaker aqueduct (which was entirely destroyed,) and repairing the Dansville side cut canal.

The entrance to the canal from the Genesee river, at Mount Morris, was tortuous and nearly filled with shifting sands, and boats were frequently aground.

This channel has been widened and straightened, and has proved to be a very important improvement.

The payments for repairs upon this section are as follows:

To paid repair contractor his annual compensation..	$4,200 70
To paid for repairs on Squakie Hill bridge..........	290 88
To paid same for raising banks near Buffalo street, Rochester, certified to by division engineer......	169 19
To paid for protecting dam at Mount Morris, (services rendered 1861)	24 00
To paid expenses of State dredge widening and opening channel	726 31
Expended by superintendent*........................	7,740 16
Total payments........................	$13,151 24

Repair Section No. 2.

This repair section is thirty-six miles long, and extends from the junction of the canal with the Dansville side-cut at the Shakers' settlement to and including the Genesee River feeder at Oramel.

The mechanical structures upon the section are the following:

61 lift locks,
1 guard-lock,
1 dam and bulkhead,
7 aqueducts,
30 culverts,
9 waste weirs,
35 road bridges,
28 farm bridges,
4 tow-path bridges.

The section is under contract to be kept in repair by George D. Lord, assignee of John Lambert, for five years from the 15th of March, 1861, for the annnal compensation of $12,540.

Several miles of the canal on this section were almost entirely destroyed by the disastrous flood of 1861. A large amount of work has been done to repair and place the canal in ordinary condition, and a further expenditure has been made to protect the banks from the effects of similar floods. The improvements that have been made were very necessary, and that portion of the canal is now in excellent condition.

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* The expenditures made by superintendent in December, 1861, are included in this amount.

The cost of repairs have been as follows :

To paid repair contractor his annual compensation	$9,875 35
To paid same for repairing break of September 27th, 1861, as certified to by division engineer	8,430 00
To paid contractor for constructing Fillmore bridge over Genesee river, at Hume	884 00
To paid contractor for constructing lattice bridge at Hume	153 00
Total payments	$19,342 25

REPAIR SECTION No. 3.

The section is thirty-eight miles long, and extends from the south bank of the Genesee river, at Oramel, below and including lock No. 72, to the Allegany river, at Millgrove pond.

The following mechanical structures are upon the section :

34 locks,
1 guard-lock,
4 aqueducts,
15 waste weirs,
23 culverts,
37 road bridges,
14 farm bridges,
1 tow-path bridge,
2 road and change bridges,
1 foot bridge,
5 lock houses,
1 overfall, at Rockville reservoir,
2 feeder dams.

The section is under contract to be kept in repair by Messrs. Luckey & Martin, assignees of Wm. McArthur, for five years from the 1st day of August, 1860, for $7,433 per annum.

Payments for repairs have been as follows :

Paid repair contractor his annual compensation	$4,733 68
Paid same for repairs not embraced in contract, certified to by division engineer	6,101 89
	$10,835 57

This section requires repairs to a large extent, having suffered in common with other portions from the flood before alluded to.

EXTRAORDINARY REPAIRS.

The extension of the Genesee Valley canal was completed last December, and brought into use on the opening of navigation. This completes the construction of the canal, and the accounts have been closed.

The Genesee Valley canal was built 42 feet wide upon the surface, 26 feet wide on bottom, and to hold four feet of water. There is no vertical or slope wall on the canal, and consequently in many places the banks have slid in to so great an extent that loaded boats cannot pass each other. The boats on the canal average fourteen feet in width, so that were the canal in good condition it would then be difficult for two boats to pass each other. It now happens in some instances that loaded boats, when meeting, one or the other is obliged to retrace its course until a place wide enough is found to pass. Such places should be widened at the expense of the State, and by using ten thousand dollars a year judiciously for five years, navigation would be materially improved. The locks of the canal are of three kinds, some all wood, some composite, and some stone. Many of the wooden locks are in a miserably dilapidated condition, and must be soon rebuilt.

The waste weirs have been extensively repaired and brought into use; the most of them had been filled up, insecure, and were not available for the purposes designed.

The aqueducts are in fair preservation. The culverts seem to be well built, but there are not enough of them. At places small streams run into the canal where they are not needed as feeders, thus filling it with deposit and endangering its safety by floods.

The detentions have been numerous, rendering navigation very uncertain and difficult. A portion of the causes of those detentions have been removed, but the principal remedy is additional feeders or reservoirs to furnish a greater supply of water than is now afforded.

The past season was an unusually dry one, and detentions were numerous at Mount Morris, at the crossing of the river, on account of the want of water in the Genesee river to feed the canal and keep the pond full.

At Oramel, where the canal is fed from the Genesee, a dam was constructed so *that all the water in the river was turned into the canal.* There was no navigation on the summit level for twenty-eight continuous days prior to the date of this report. The summit is fed from the Ischua feeder and the Oil creek reservoir. The canal from Olean to Milgrove is fed mainly from Alleghany river and by the lockage water from the summit level.

All the water flowing through the Ischua creek was not diverted to the summit as early as it should have been. In ordinary seasons a large supply of water may be expected from that source. To get this supply, a new dam should be at once erected at this point, and a small reserve of water kept there, by increasing the height of the dam.

The present dam is a slight and worthless structure. The estimated cost of this dam and improving the head of the feeder is $5,000. It is represented that no land damages will be incurred by the proposed improvement.

The banks of the Cuba reservoir should be raised four feet higher, allowing water in the basin to be raised three feet higher than at present. This increase would assist very materially, as it is estimated at fifty-five million cubic feet.

There is no doubt but the banks of the reservoir are capable of sustaining the increased pressure of water. It is believed that, in ordinary weather, such as is usual in that region, that with those improvements, and very great care in the use of water, that navigation could be continued the entire season.

The sliding in of the high banks at Portage has delayed navigation five days. Those banks should be so graded that this difficulty be removed. It is said that for several years there has been detention from this cause. It is estimated that this improvement will cost $1000.

The banks, in places, are very high, and the Genesee river at their foot causes them to slide and fall off. Considerable strengthening is required, and at the York high embankment the earth must be removed from the berm side and put on the tow path side. The expenses of such necessary work is estimated at $2,000.

The two trunk aqueducts at Portage are getting unsafe, and should be removed and earth embankments constructed in their stead. This work is proper, and will cost $18,000. At least three locks must be rebuilt the coming year.

To build them of stone will cost near $25,000; the cost of wood locks would be about $16,000.

The business of this canal has largely increased the past season. A fair proportion of the increase is by reason of its connection with the Allegany river. Milgrove is but twenty-eight miles from the great coal fields of McKean county, and this canal seems the natural channel for this coal to be brought to market.

It may become one of the most important tributaries to the Erie, and good faith requires that it shall be kept in navigable condition.

The canal is now in much better condition than in the spring, and while it is hoped that it is in an improving condition, it is but just to state that it still bears the evidence of many years' neglect.

The following is a summary of the "extraordinary repairs" proposed on the Genesee Valley canal:

Widening canal between high banks	$10,000 00
Additional culverts	3,000 00
Dam for the Ischua feeder	5,000 00
Oil creek reservoir, (aside from land damages)	3,000 00
Removing high bank at Portage	1,000 00
Raising and strengthening banks at and near York	2,000 00
Removing trunk aqueducts at Portage and building earth canal	18,000 00
Rebuilding three locks	25,000 00
Iron bridges, Nunda, Mount Morris, and Rochester	3,000 00
Total	$70,000 00

The above estimates have been made by the engineer on the Western Division.

PAYMENTS TO 1ST OCTOBER, 1862.

The Commissioner in charge of the Western Division has issued drafts and certificates for work and materials done upon the canals, and for awards made by the Canal Appraisers, as follows:

Enlargement Erie Canal.

Drafts on account enlargement	$57,150 45
do for engineering	17,294 81
do land damages	42,742 03
Certificates for land damages	111,559 82
do enlargement (final accounts)	50,150 86
	$278,897 97

Enlargement Genesee Valley Canal.

Drafts on account extension Genesee Valley canal	$612 00
Certificate (final account) extension Genesee Valley canal	14,770 88
Drafts for land damages extension Genesee Valley canal	423 90
Drafts for land damages Genesee Valley canal	375 16
	$16,181 94

Repairs Erie Canal.

Drafts for repairs	$59,840 29

Repairs Genesee Valley Canal.

Drafts for repairs	$33,083 02
do engineering	2,181 82
	$35,264 84

Drafts for Commissioner's salary	$1,500 00
Total amount drafts drawn and certificates issued	$391,685 04

Payments in cash have been made by the Commissioner, from January 1st to October 1st, as follows:

Erie Canal.

For repairs outside of repair contracts	$1,835 39
For repairs on section 12, charged to repair contractor and deducted from his draft	180 37
For temporary occupation of lands, &c.	220 00
For snubbing posts and setting same	881 15
For tools purchased from repair contractor on section 12, and transferred to his successor	783 75
For publication of notices and printing	729 00
For clerk hire and traveling expenses of clerks of the Contracting Board and Board of Canal Commissioners, and the contingent expenses of the office in Albany	1,545 62
For clerk hire, rent, traveling expenses—as allowed by law—and other expenses of the Canal Commissioners' office in Buffalo	1,466 00

For police services in regulating boats and preventing detention		184 25
For other miscellaneous items		92 00
		$7,917 53

Enlargement Erie Canal.

For printing and publishing notices	$444 05
For claims for temporary occupation of land	306 00
For forces put on under contracts, and charged to the contractors	23,429 00
For excavating and removing original material on sec. 368, and guard lock section, in the year 1861	2,981 86
For same on sec. 292, 290 and 361	1,232 38
For removing towing path, Black Rock, obstructing water way	769 20
For raising bridges	2,535 81
	$31,698 30

Genesee Valley Canal.

For publishing notices to contractors		$817 80
For repairs outside of repair contracts		1,783 97
For dredging at outlet of canal, Mount Morris		726 31
For services rendered by Hiram Wood		3 00
Total		$3,331 08
Total payments		$434,631 95
Of which, are on account of Erie canal enlargement	$310,596 27	
On account repairs of the Erie canal	64,746 20	
On account enlargement Genesee Valley canal	16,181 94	
On account repairs of the Genesee Valley canal	38,595 92	
On account of Commissioner's salary, clerk hire and office expenses	4,511 62	
		434,631 95

F. A. ALBERGER,
Canal Commissioner.

BUFFALO, October 1, 1862.

Rates of toll established by the Canal Board on persons and property transported on the New York State canals, to take effect on the opening of navigation in 1862.

Provisions, &c.

	cts.	m.	fr.
1. On bacon, per 1,000 pounds per mile	0	1	0
2. On lard, lard oil, tallow and grease, per 1,000 pounds per mile	0	1	5
3. On salted beef, salted pork, butter, cheese, bran and ship stuffs, oil meal and oil cake, per 1,000 pounds per mile	0	2	0

Iron, Minerals, Ores, &c.

	cts.	m.	fr.
4. On salt manufactured in this State, gypsum the product of this State, mineral coal, coal oil, brick and fire-brick, soda-ash, ice, sand, limestone, clay, earth, manure, pig and smelted copper, iron ore, and copper ore, and bar and pig lead, going towards tide water	0	1	0
5. On foreign salt, per 1,000 pounds per mile	0	2	5
6. On foreign gypsum, the product of other States, bloom, scrap and pig iron, iron bolts, broken castings, pot and pearl ashes, calcined plaster, fire-proof and hydraulic cement, bed plates for steam engines, plow castings and iron safes	0	2	0
7. On leached ashes, bituminous coal, going towards and carried to tide-water, charcoal and petroleum or earth oil, per 1,000 pounds per mile	0	0	5
8. On stove pipe and furniture for stoves, not cast iron, and barytes, per 1,000 pounds per mile	0	3	0
9. On lime and water lime, per 1,000 pounds per mile	0	1	5
10. On iron car wheels and car axles, stoves and all other iron castings, except machines and the parts thereof, per 1,000 pounds per mile	0	3	0

Furs, Peltry, Skins, &c.

	cts.	m.	fr.
11. On furs, and skins of animals producing furs, per 1,000 pounds per mile	0	3	0

	cts.	m.	fr.
12. On deer, buffalo and moose skins, per 1,000 pounds per mile	0	3	0
13. On green hides of domestic animals of the United States, per 1,000 pounds per mile	0	3	0
14. On imported raw-hides of domestic and other animals, per 1,000 pounds per mile	0	3	0
Furniture, &c.			
15. On furniture, cabinet ware and chairs, per 1,000 pounds per mile	0	3	0
16. On carts, sleighs, carriages, wagons, mattresses, mechanics' tools, looking glasses, willow ware and piano fortes, per 1,000 pounds per mile	0	2	0
Stones, Slates, &c.			
17. On tile for roofing, per 1,000 pounds per mile	0	2	0
18. 1. On wrought stone, per 1,000 pounds per mile	0	1	5
2. On all stone, unwrought or partly wrought, stone for the manufacture of lime and slate, per 1,000 pounds per mile	0	1	0
Lumber, Wood, etc.			
19. On timber, squared and round, per 100 cubic feet per mile, if carried in boats	0	6	0
20. On the same, if carried in rafts, per 100 cubic feet per mile	1	0	0
21. On the same, if cleared after the first of June, and arriving at tide water before the 15th of September, inclusive, per 100 cubic feet per mile,	0	7	0
22. On the same, if not arriving until after the 15th of September	1	5	0
23. On lumber, carried in boats, when weighed, per 1,000 pounds per mile, viz:			
1. On white pine, white wood, cherry, bass wood, cedar, boards, plank, scantling, and all siding, lath and other sawed stuff, less than one inch thick, carried in boats (except such as is enumerated in rates Nos. 25 and 38)	0	2	0
2. On oak, hickory, beech, sycamore, black walnut, butternut, maple, ash, elm, fir, tamarack, yew and spruce	0	1	5
3. On hemlock	0	0	6

	cts.	m.	fr.
On lumber carried in boats, when not weighed, per 1,000 feet per mile, viz:			
4. On boards, plank, scantling and sawed timber, reduced to inch measure, and all siding, lath and other sawed stuff, less than one inch thick, (except such as is enumerated in rate No. 25,) tolls computed on surface measure; and all kinds of red cedar, cedar posts, estimating that a cord, after deducting for openings, will contain 1,000 feet, per 1,000 feet per mile	0	5	6
5. On hemlock, per 1,000 feet per mile	0	2	5
6. On subs. 4 and 5, if transported in rafts, per 1,000 feet per mile	2	5	0
7. On saw dust and empty barrels and casks, per 1,000 pounds per mile	0	1	0
On empty barrels and casks transported in rafts, per 1,000 pounds per mile	0	5	0
24. On mahogany, (except veneering,) reduced to inch measure, per 1,000 feet per mile	0	5	6
25. On sawed lath of less than ten feet in length, split lath, hoop poles, handspikes, rowing oars, broom handles, spokes, hubs, tree-nails, fellies, boat knees, ship knees, plane stocks, pickets for fences, and stuff, manufactured or partly manufactured, for boxes, chairs, or bedsteads, hop-poles, brush handles, brush backs, looking glass backs, gun stocks, plow beams, plow handles, per 1,000 pounds per mile	0	2	0
26. On ship knees transported in rafts	0	5	0
27. On staves and heading, undressed, transported in boats, per 1,000 pounds per mile	0	1	2
28. On staves and heading, sawed, cut and dressed, or partly dressed, shooks, stave butts and bolts not exceeding four feet and a half in length, and rived hoops transported in boats	0	2	0
29. On the same, if transported in rafts, per 1,000 pounds per mile	0	5	0
30. On shingles, carried in boats, per 1,000 pounds per mile	0	1	5
31. On shingles, in boats, per M. per mile	0	0	5

	cts.	m.	fr.
32. On the the same, if conveyed in rafts, per M. per mile	0	4	0
33. On split and round posts (not exceeding eight feet in length), and rails for fences (not exceeding fourteen feet in length), per M. per mile, carried in boats	3	0	0
34. On the same, if conveyed in rafts, per M. per mile	8	0	0
35. On wood for fuel and tan bark, per cord per mile	0	5	0
36. On the same, if transported in rafts, per cord per mile	2	0	0
37. On wood used in the manufacture of salt, per cord per mile	0	5	0
38. On sawed stuff for window blinds, not exceeding one-fourth of an inch in thickness, and window sashes and blinds, per 1,000 pounds per mile	0	6	0
39. On tan bark, ground, per 1,000 pounds per mile	0	2	5
Agricultural Products, &c.			
40. On clover seed, grass seed, and dried fruit per 1,000 pounds per mile	0	4	0
41. On domestic distilled spirits and hops, per 1,000 pounds per mile	0	2	0
42. On wool, domestic cottons, and domestic woolens, per 1,000 pounds per mile	0	2	0
43. On cotton, per 1,000 pounds per mile	0	1	0
44. On live cattle, sheep, hogs, bones, (except for manure,) and rags, per 1,000 pounds per mile	0	2	0
45. On bones for manure	0	1	0
46. On horses, (except those used exclusively for towing boats or other floats,) per 1,000 pounds per mile	0	3	0
47. On horses used exclusively for towing boats or other floats, exempt from toll.			
48. On hemp and tobacco, going towards tide water, per 1,000 pounds per mile	0	1	0
49. On tobacco going from tide water, flax seed, apples, and potatoes, per 1,000 pounds per mile	0	2	0
50. On corn, corn meal, and oats, per 1,000 pounds per mile	0	2	5

	cts.	m.	fr.
51. On flour, wheat, barley, rye, peas, beans, and junk, per 1,000 pounds per mile	0	3	0
52. On onions, turnips, all other esculent roots, pressed hay and pressed straw, per 1,000 pounds per mile	0	1	0
53. On all other agricultural productions of the United States, not particularly specified, per 1,000 pounds per mile	0	3	0
Merchandise.			
54. On sugar, molasses, coffee, iron in bars, bundles and sheets, steel, boiler iron, nails and spikes, horse shoes, bridge iron and railings, gas and water pipes, crockery and glassware, flint and enamel ware, tar, turpentine, leather, varnish and iron safes, per 1,000 pounds per mile	0	2	0
55. On merchandise non-enumerated, going from tide water	0	1	0
56. On railroad iron and railroad chairs, per 1,000 pounds per mile	0	2	0
57. On threshing, mowing and reaping machines, fanning mills, plows, harrows and drill barrows, per 1,000 per mile	0	2	0
58. On powder, gunpowder, demijohns, trees and shrubbery, per 1,000 per mile	0	4	0
Articles not Enumerated.			
59. On all articles not enumerated or excepted, going towards tide water, per 1,000 pounds per mile	0	3	0
60. On the same going from tide water, except merchandise	0	2	0
Boats and Passengers.			
61. On boats, propelled by steam, having preference at the locks over other boats, per mile	4	0	0
62. On boats, in tow of such steamboats, not exceeding five, and having such preference, per mile	4	0	0
63. On boats, not propelled by steam, or in tow, and having such preference, per mile	4	0	0
64. On boats *used chiefly* for the transportation of passengers upon *all canals*, per mile	4	0	0

	cts.	m.	fr.
On the same, if they elect to commute for tolls upon passengers	3	0	0
65. On boats *used chiefly* for the transportation of property, per mile	2	0	0
On the same, if they elect to commute for tolls upon passengers	2	3	0
66. On all persons over ten years of age, per mile	0	0	5

The following is a Schedule of all Repair Contracts let in pursuance of act, chap. 105, *Laws of* 1857, *to the present time, and shows the commencement of the several terms, the canal or section embraced in the contract, the duration of each term, the annual compensation to the contractor, and the several amounts of cash deposits as security for the performance of the contracts.*

Commencement of term.	Canal and section.	Duration of term.	Annual compensation.	Cash security.	Remarks.
Feb. 1, 1859	Oswego, section 2	3 years	$12,899	......	Expired February 1, 1862.
Feb. 1, 1859	Chemung and feeder	do	13,475	......	do do
Feb. 1, 1859	Chenango, section 3	do	4,900	......	Abandoned March 5, 1861.
Feb. 1, 1859	Erie, section 9	do	4,995 750	......	do do
Feb. 1, 1859	Erie, section 7	do	2,473	......	Abandoned February 28, 1861.
April 1, 1859	Cayuga and Seneca	do	3,574	......	Abandoned March 15, 1861.
May 1, 1859	Genesee Valley, section 1	do	4,800	......	And 9 cents per cubic yard for excavation; abandoned [Oct. 14, 1861.
May 1, 1859	Genesee Valley, section 3	do	4,389	......	Abandoned March 8, 1860.
May 1, 1859	Erie, section 10	do	6,190	......	do May 1, 1859.
May 1, 1859	Erie, section 12	do	3,453	......	do February 4, 1862.
May 1, 1859	Erie, section 13	do	5,495	......	do December 19, 1860.
May 1, 1859	Champlain, section 1	do	8,973	......	do April 2, 1860.
May 1, 1859	Champlain, section 2	do	6,800	......	do do
May 1, 1859	Champlain, section 3	do	5,350	......	do do
May 1, 1859	Erie, section 2	do	7,900	......	do October 8, 1859.
May 1, 1859	Erie, section 3	do	7,440	......	Expired May 1, 1862.
May 1, 1859	Erie, section 4	do	8,849	......	do do
May 1, 1859	Erie, section 5	do	2,995	......	Abandoned August 20, 1859.
May 1, 1859	Oswego, section 1	do	2,800	......	Expired May 1, 1862.
Oct. 1, 1859	Erie, section 10	do	7,800	......	Abandoned October 8, 1859.
Oct. 1, 1859	Erie, section 11	do	8,280	......	Expired October 1, 1862.
March 1, 1860	Erie, section 14	do	14,500		
Oct. 1, 1859	Erie, section 8	do	7,000	$2,000	do do
Nov. 1, 1859	Improvement of Black river	5 years	3,800	2,000	
March 4, 1860	Erie, section 1	3 years	28,440	4,000	
March 4, 1860	Erie, section 2	do	9,700	2,000	
March 4, 1860	Erie, section 5	do	5,890	2,000	
March 4, 1860	Erie, section 10	do	9,430	2,000	
August 1, 1860	Champlain, section 1	5 years	8,659	2,000	Abandoned June 1, 1862.

August 1, 1860	Champlain, section 2	do	9,300	2,000	
August 1, 1860	Champlain, section 3	do	4,300	2,000	
August 1, 1860	Genesee Valley, section 3	do	7,433	2,000	
Oct. 1, 1860	Oneida Lake and feeder	do	2,375	2,000	
Oct. 1, 1860	Crooked Lake	do	3,869	2,000	
Oct. 1, 1860	Chenango, section 1	do	11,500	2,000	Abandoned March 5, 1861.
Oct. 1, 1860	Chenango, section 2	do	5,600	2,000	
March 1, 1861	Black River, section 2	do	4,178	2,000	
March 15, 1861	Erie, section 13	do	9,800	4,000	
March 15, 1861	Genesee Valley, section 2	do	12,540	3,000	
May 1, 1861	Erie, section 7	do	3,490	4,000	
May 1, 1861	Erie, section 9	do	7,000	4,000	
May 1, 1861	Black River, section 1	4⅔ years	8,700	4,000	
May 1, 1861	Chenango, section 1	5 years	13,990	4,000	
May 1, 1861	Chenango, section 3	do	7,000	4,000	
June 1, 1861	Cayuga and Seneca	4 years	4,490	4,000	Abandoned April 15, 1862.
May 1, 1862	Erie, section 3	4⅔ years	10,900	4,000	
May 1, 1862	Erie, section 4	4⅔ do	12,780	4,000	
Nov. 1, 1862	Erie, section 8	4+ do	4,940	4,000	
Nov. 1, 1862	Erie, section 11	4 + do	11,900	4,000	
April 1, 1862	Erie, section 12	4⅞ do	6,700	4,000	
Oct. 1, 1862	Champlain, section 1	4½ do	13,848	4,000	
May 1, 1862	Oswego, section 1	4⅔ do	9,000	4,000	
May 1, 1862	Oswego, section 2	4⅔ do	11,900	4,000	
July 1, 1862	Cayuga and Seneca	4½ do	9,950	4,000	
April 1, 1862	Chemung and feeder	4⅔ do	15,960	4,000	
Feb. 1, 1862	Genesee Valley, section 1	5 do	8,472	4,000	

TABLE

Exhibiting the date of the Opening and the Closing of the Hudson River, and the Number of Days Open; also the time of Commencement and Close of each Navigable Season of Canals, and the Number of Days of Navigation since 1824; *also the date of the Opening of Lake Erie, since* 1827.

Opening and closing of the Hudson river.			Commencement and close of navigation of Erie canal.			Opening of the lake.
River open.	River closed.	Open days.	Canal open.	Canal closed.	Navigablé days.	
March 3, 1824	Jan. 5, 1824	309	April 30, 1824	December 4	219	
March 6, 1825	Dec. 13, 1825	283	April 12, 1825	do 5	238	
Febru'y 25, 1826	Dec. 24, 1826	302	April 20, 1826	do 18	243	
March 20, 1827	Nov. 25, 1827	251	April 22, 1827	do 18	241	April 21, 1827
Febru'y 8, 1828	Dec. 23, 1828	220	March 27, 1828	do 20	269	April 1, 1828
April 1, 1829	Jan. 14, 1829	286	May 2, 1829	do 17	230	May 10, 1829
March 15, 1830	Dec. 25, 1830	283	April 20, 1830	do 17	242	May 5, 1830
March 15, 1831	Dec. 6, 1831	263	April 16, 1831	do 1	230	May 8, 1831
March 25, 1832	Dec. 21, 1852	289	April 25, 1832	do 21	241	April 27, 1832
March 21, 1833	Dec. 13, 1833	277	April 19, 1833	do 12	238	April 23, 1833
Febru'y 29, 1834	Dec. 15, 1834	291	April 17, 1834	do 12	240	April 6, 1834
March 25, 1855	Nov. 30, 1835	268	April 15, 1835	November 30	230	May 8, 1835
April 4, 1836	Dec. 7, 1836	248	April 25, 1836	do 26	216	April 27, 1836
March 27, 1837	Dec. 14, 1837	261	April 20, 1837	December 9	234	May 16, 1837
March 19, 1838	Nov. 25, 1838	257	April 12, 1858	November 25	228	March 31, 1838
March 25, 1839	Dec. 18, 1839	286	April 20, 1839	December 16	241	April 11, 1839
Febru'y 25, 1840	Dec. 5, 1840	285	April 20, 1840	do 9	228	April 27, 1840
March 24, 1841	Dec. 19, 1841	286	April 24, 1841	November 30	221	April 14, 1841
Febru'y 4, 1842	Nov. 28, 1842	308	April 20, 1842	do 28	222	March 7, 1842
April 13, 1843	Dec. 10, 1843	242	May 1, 1843	do 30	214	May 6, 1843
March 18, 1844	Dec. 17, 1844	278	April 18, 1844	do 26	222	March 14, 1844
Febru'y 24, 1845	Dec. 3, 1845	283	April 15, 1845	do 29	228	April 3, 1845
March 18, 1846	Dec. 14, 1846	275	April 16, 1846	do 25	224	April 11, 1846
April 7, 1847	Dec. 25, 1847	263	May 1, 1847	do 30	214	April 23, 1847
March 22, 1848	Dec. 27, 1848	292	May 1, 1848	December 9	223	April 9, 1848
March 19, 1849	Dec. 26, 1849	286	May 1, 1849	do 5	219	March 25, 1849

March 10, 1850	Dec. 17, 1850	282	April 22, 1850	do	11	234	March 25, 1850
Febru'y 25, 1851	Dec. 14, 1851	293	April 15, 1851	do	5	235	April 2, 1851
March 28, 1852	Dec. 23, 1852	270	April 20, 1852	do	16	239	April 20, 1852
March 23, 1853	Dec. 21, 1853	274	April 20, 1853	do	20	245	April 14, 1853
March 17, 1854	Dec. 8, 1854	266	May 1, 1854	do	3	217	April 29, 1854
March 27, 1855	Dec. 20, 1855	268	May 1, 1855	do	10	224	April 21, 1855
April 11, 1856	Dec. 14, 1856	248	May 5, 1856	do	4	214	May 2, 1856
Febru'y 27, 1857	Dec. 27, 1857	303	May 6, 1857	do	15	223	April 27, 1857
March 20, 1858	Dec. 17, 1858	273	April 28, 1858	do	8	225	April 15, 1858
March 13, 1859	Dec. 10, 1859	273	April 15, 1859	do	12	242	April 7, 1859
March 6, 1860	Dec. 14, 1860	283	April 25, 1860	do	12	232	April 17, 1860
March 5, 1861	Dec. 23, 1861	294	May 1, 1861	do	10	224	April 13, 1861
April 4, 1862	Dec. 19, 1862	259	May 1, 1862	do	10	224	

SCHEDULE

Of contracts let by Board of Canal Commissioners under acts, chaps. 327, *Laws of* 1854, *and* 554 *of* 1855, *showing the commencement of the several terms, the canal or section embraced in the contract, the duration of each term, and the annual compensation to the contractors.*

Commencement of term.	Canal and section.	Duration of term.	Annual compensation	Remarks.
Oct. 1, 1854..	Section 8, Erie canal	5 years	$7,370	Expired October 1, 1859
Mar. 1, 1855..	Section 1, Erie canal	5 years	43,000	Expired March 4, 1860
Oct. 1, 1855..	Section 1, Chenango canal	5 years	14,700	Expired October 1, 1860
Oct. 1, 1855..	Section 2, Chenango canal	5 years	6,000	Expired October 1, 1860
Oct. 1, 1855..	Oneida Lake canal	5 years	3,975	Expired October 1, 1860
Oct. 1, 1855..	Crooked Lake canal	5 years	4,473	Expired October 1, 1860
Jan. 1, 1856..	Section 1, Black River canal	5 years	3,999	Expired January 1, 1861
Jan. 1, 1856..	Section 2, Black River canal	5 years	9,985	Expired January 1, 1861
Apr. 15, 1858..	Addition to sec. 2, Black River canal. See chap. 185, Laws of 1858	......	2,000	Expired January 1, 1861
Feb. 1, 1856..	Section 2, Genesee Valley canal	5 years	13,900	Expired Febru'y 1, 1861

No. of bridges, E. & W.	LOCATION OR NAME TURES.	ES BETWEEN NUMBERS OF BRIDGES. CULVERTS. Stone or composite.	 Number & span of opening or arch.	Waste w'r, length of waste.	FEEDERS TO CANAL. Names.	 Capacity, cu. ft. per min., dry season.
	REPAIR SECTION			Ft. in.		
	Albany basin					
	Lock No. 1, Albany					
1	Water street, Albany					
2	Lawrence street, Allan					
	Weigh lock, Albany					
3	Ferry street, Albany			29		
	Waste weir, section No.					
	Culvert, Patroon creek	St. arch.	3 spans, 10, 11, 10			
4	Patroon					
	Culvert	St. arch.				
	Lock No. 2					
	Culvert	St. arch.				
5	Bull's Head					
	Culvert	St. arch.				
6	Van Rensselaer's					
	Culvert	St. arch.				
7	Schuyler's					
	Culvert	St. arch.				
8	Dunlop's					
	Culvert	St. arch.	2 of 7 ft. 6 in.			
9	Schuyler's					
	Culvert	Stone.				
10	Deanham's					
11	Mansion street, Port Sc					
	Locks, Port Schuyler					
	Side-cut					
12	Albany and Troy					
13	U. S. Arsenal					
14	U. S. Arsenal					
15	Schenectady street, We					
	Culvert	St. box.				
16	Ferry street, West Troy					
17	Canal street, West Troy					
18	Genesee street, West T					
	Locks, West Troy side-cut					
	Side-cut					
19	Union street, West Tro					
20	Auburn street, West T					
	Weigh lock, West Troy					
21	N. Y. Central R. R.					
	Champlain canal				Mohawk, thro' Champlain.	6.570
22	Junction of Champlain					
	Lock No. 3, Junction					
	Culvert and waste weir	St. arch.		29 9		
23	Northern railroad					
	Lock No. 4					
24	Gother's					
	Lock No. 5					
	Lock No. 6					
	Culvert, Lansing creek	St. arch.	1 of 12 ft.			
	Lock No. 7					
	Lock No. 8					
25	Alexander's					
	Lock No. 9					
	Culvert and waste weir	St. arch.	1 of 8 ft.	1[illegible]		
	Lock No. 10					
	Lock No. 11					
	Lock No. 12					
26	Columbia street, Cohoe					
	Lock No. 13					
	Culvert	St. arch.	1 of 8 ft.			

DIVISION.

No. of bridges, E. to W.	LOCATION OR NAME O TURES.	ES BETWEEN NUMBERS OF BRIDGES.				
		CULVERTS.		Waste w'r, length of waste.	FEEDERS TO CANAL.	
		Stone or composite	Number & span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
				Ft. In		
65	Union street, Schenectady					
66	Liberty street, Schenectad					
67	State street, Schenectady					
	Culvert	St. arch.	1			
68	Church street, Schenectad					
69	Frog alley, Schenectady					
	Waste weir, section 30			114		
	Culvert, section 30	St. arch.	1 of 6 ft			
	Culvert, section 30	St. arch.	1			
70	Bradt's					
	Lock No. 23					
71	Van Patten's					
	Lock No. 24					
	Culvert	St. arch.	1 of 6 ft. 10 in			
72	Becker's					
73	Van Slyck's					
	Aqueduct, Potters kill) in					
74	Abram Bradt (private)					
	Culvert, section 34		1 of 7 ft			
	Culvert, section 35		1 of 10 ft. 6 in			
75	Thomas'					
76	Crawford					
77	Maybee's					
	Lock No. 25					
78	Clute's					
79	Veeder's					
80	Johnson's					
81	Kline					
	Culvert, section No. 39	Com'site	1 of 2 ft. 6 in			
	Aqueduct, San Sai kill					
82	Hoffman's Ferry					
	Culvert	St. arch.	1 of 4 ft			
	Culvert	Com'site	1 of 1 ft. 6 in			
	Culvert	St. arch.				
83	Swart (private)					
84	J. Kline					
	Culvert, section 43	St. arch.	1 of 10 ft			
85	French's					
	Lock No. 26					
86	Phillips'					
	Lock No. 27					
	REPAIR SECTION N					
	Culvert	St. arch.	2 of 18 ft			
	Culvert	St. arch.	1 of 7 ft			
	Culvert	St. arch.	1 of 4 ft			
87	Van Olinda's, (private)					
	Waste weir and culvert	St. arch.	1	15 8		
88	McDonald, Port Jackson					
89	Bridge street, Port Jacks					
	Culvert, Port Jackson	St. arch.	4 of 20 ft			
	Culvert, Port Jackson	St. arch.	1 of 6 ft			
	Culvert, Port Jackson	Com'site	1 of 3 ft			
	Lock No. 28 (Yankee Hill					
90	Wemple's (private)					
91	John Ender's					
	Culvert, section 50					
	Feeder				Schoharie cr'ek	6.800
	Lock No. 29 (Empire)					
92	P. J. Ender's					
93	Fort Hunter					
	Lock No. 30					
	Aqueduct, Schoharie cree in					
94	Willer's (private)					

DIVISION.

TURES BETWEEN NUMBERS OF BRIDGES.

No. of bridges, E. to W.	LOCATION OR T	n openings.	Culverts. Stone or composite	Culverts. No. and span of opening or arch.	Waste w'r, length of waste.	Feeders to Canal. Names.	Feeders to Canal. Capacity, cu. ft. per min., dry season.
					Ft. in.		
95	**Hudson**						
	Culvert, section		St. arch.	1 of 4 ft.			
96	Koon's						
	Culvert		St. arch.	2 of 10 ft.			
97	Auriesville						
	Culvert		St. arch.	1 of 22 ft.			
98	Kassan's						
99	Putman's						
100							
101	Montgomery cou						
102	Vroman's						
	Culvert		St. arch.	1 of 4 ft.			
103							
104	**A. J. Yates (pri**						
105	**Franklin street,**						
	Culvert, Fulton		St. arch.	2			
106	**Gardinier's (pri**						
107	Main street, Fu						
108	**Mohawk street,**						
	Culvert, Fulton		St. arch.	1 of 4 ft.			
109	Snyder's						
110	Staring's						
111	Printup's						
	Printup's aque	10 in					
	Culvert		St. arch.	1 of 4 ft.			
112	**A. J. Yates**						
	Culvert, section		St. arch.	1 of 4 ft.			
113	Yates & Downi						
114	**Yost's ferry**						
	Olstona aquedu	8 in					
115	J. L. Yates						
	Lasher's aqued	8 in					
116	Lasher's bridge						
117	Mitchell & Hig						
	Culvert		St. arch.				
	Waste weir						
	Lock No. 31, S						
118	Geo. S. Sprake						
	Spraker's aque	10 in					
119	Ferry street, S						
	Culvert		St. arch.	1 of 7 ft.			
120	**Van Evera's**						
121	Kelley's						
122	Van Alstyne's						
123	Vroman's						
	Culvert		St. arch.	1 of 4 ft.			
124	Dry dock, Can						
	Aqueduct, Can	9 in					
125	**Canal street, C**						
126	Stafford & Clar						
127	**Buell's (privat**						
	Culvert		Stone				
128	Zimmerman's						
129	Kittle's						
	Culvert		Stone				
130	Verplank's						
	Lock No. 32						
131	**Chamberlain, I**						
	Aqueduct, For						
132	**Canal street, F**						

DIVISION.

No. of bridges, E. to W.	LOCATION OR NA TURE	RES BETWEEN NUMBERS OF BRIDGES.				
		Culverts.		Waste w'r, length of waste.	Feeders to Canal.	
		Stone or composite	Number & span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
				Ft.		
133	River street, Fort Pl					
	Culvert	Stone				
134	Clark's					
135	Bide's					
	Culvert	St. arch.	1 of 12 ft. 6 in			
136	Cornelius (private)					
	Waste weir			1 of 14		
137	Smith's					
	Lock No. 33					
138	Powell's					
	Culvert	Stone				
139	Cox's, St. Johnsvill					
140	Ferry					
141	Crouses'					
	Feeder.				Rocky rift.	10,602
	Repair Sect					
	Lock No. 34					
142	Mindenville					
143	Burhee's					
144	Snell's					
145	Wheeler's					
146	Smith's					
147	Van Alstyne's					
	Culvert	Stone				
148	Sholl's					
149	Green's					
	Lock No. 35					
	Aqueduct, Castle cr 11 in					
150	Fox & Stanton					
151	Diefendorf					
	Culvert	Stone				
152	Schuyler's (private)					
153	Conner's					
	Culverts	Stone				
	Waste weir and cul	Stone		14		
154	Fink's (private)					
155	Fink's					
	Lock No. 36					
	Waste weir			Temporary		
	Lock No. 37					
	Lock No. 38					
	Feeder, Little Fall				Moh'k riv., N.S	Not det.
156	Ann street, Little					
	Feeder, Little Fall				do S. S	12,643
	Lock No. 39, Little					
157	Bellinger street, Li					
	Waste weir			69		
158	Sharp's (private)					
159	Casler's					
	Culvert, section No	Stone				
160	John Casler's					
	Culvert	Stone				
	Lock No. 40, Jack					
	Culvert	Stone				
	Waste weir			Req'rs repair		
161	Rankin's (private)					
162	Miller's					
163	Snell's					
	Culvert					
164	Staring's					

Digitized

DIVISION.

RES BETWEEN NUMBERS OF BRIDGES.

No. of bridges, E. to W.	LOCATION OR NA TUR		CULVERTS.		Waste w'r, length of waste.	FEEDERS TO CANAL.	
			Stone or composite	No. and span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
					Ft. In.		
	Culvert		Stone				
	Steele's						
	Merrill's						
	Lock No. 41, Fort						
	Culvert		Stone	Double arch			
	Waste weir				68		
167	Palmer's landing						
168	Guirot's (private)						
169	Herkimer, lower re						
170	Chrisman's (privat						
171	Herkimer and Moh						
172	Casler's (private)						
173	Canal street, Moha						
	Lock No. 42, Moha						
	Lock No. 43, Moha						
	Aqueduct, Mohaw	10 in					
	Culvert		Stone				
174	Myers & Spencer						
175	Sterling						
176	Railroad street, Il					Steele's creek, Ilion.	800.
	Feeder, Ilion						
	Aqueduct, Steele c	10 in					
177	Steele & Rogers						
178	Ilion and Frankfor						
	Culvert		St. arch.	1 of 7 ft			
179							
	Lock No. 44						
	Culvert		Stone				
180	Burton & Richards						
181	Farmer & Ruse						
182	Judd, Frankfort						
183	Litchfield street, F						
	Lock No. 45, Fran						
	REPAIR SEC						
	Aqueduct, Myer's	10 in					
184	Road street, Fran						
185	Frank's						
186	Bridenbecker's						
187	Bridenbecker's						
	Culvert, road thro		St. arch.	1 of 12 ft			
188	Bridenbecker's						
189	Hulsar's						
190	Staring's						
	Culvert		St. box.	1 of 2 ft. x 2			
191	Kast's & Hulsar's						
192	McKingsley						
193	Hulsar's						
	Culvert		St. arch.	1 of 4 ft			
194	Woodhull's (priva						
195	Four mile grocery						
	Culvert		St. box.	1 of 2 ft. 6 in			
196	Austin's (private)						
197	Hollow road						
	Aqueduct, Fergus	10 in					
198	Ferguson's road						
	Culvert		St. arch.	1 of 4 ft			
199	Powell & Brinkerl						
200	Green's						
	Culvert, starch fa		St. arch.	1			
201	Starch factory, Ut						
	Culvert		St. arch.	1 of 4 ft			

DIVISION.

S BETWEEN NUMBERS OF BRIDGES.

No. of bridges, E. to W.	LOCATION OR NAME OF TURES.	CULVERTS.		Waste w'r, length of waste.	FEEDERS TO CANAL.	
		Stone or composite	Number & span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
				Ft. In.		
202	Clay street, Utica					
	Waste weir, Utica			62		
	Big Basin bridge, Utica					
203	Broad street, Utica					
204	Catherine street, Utica					
205	First street, Utica					
206	John street, Utica					
	Weigh lock, Utica					
207	Genesee street, Utica					
208	Hotel street, Utica					
209	Seneca street, Utica					
210	Washington street, Utica					
211	Broadway street, Utica					
	Feeder, Utica				Chenango canal	750
212	Whitesboro' street, Utica					
213	Bruce street, Utica					
	Culvert, Nail creek	St. arch.	1 of 10 ft.			
	Lock No. 46					
214	Schuyler street, West Utica					
215	Jones'					
	Culvert	Com'site	1 of 2 x 2.			
216	Plankroad					
	Culvert	Com'site	1 of 2 x 2.			
	Culvert	Com'site	1 of 2 x 2.			
217	Yorkville road					
	Culvert, Tail race, Oneida	St. arch.	2 of 10 ft.			
	Aqueduct, Sauquoit creek					
218	Clinton street, Whitesboro'					
219	Westmoreland street, Whit					
220	Smiths' (private)					
	Culvert, Whitesboro'	Com'site				
221	Willow street, Whitesboro'					
	Culvert	Com'site				
222	Plankroad					
223	Green's					
224	Chrisman's					
	Aqueduct, Oriskany creek					
225	Oriskany					
	Culvert, tail race, O. factor	St. arch.				
226	Brainard's					
227	Parker's					
228	Hennessey's					
	Culvert	Com'site	1 of 2 x 2.			
229	Darling's					
	Waste weir					
230	Teft's			98 6		
	Feeder				Butts' creek.	1,400
231	Newville					
	Culvert, Whitall creek	Com'site				
232	Poorhouse					
	Feeder				Moh'wk & Bl. R	10,979
233	Bouck street, Rome					
234	N. Y. C. R. R., Rome					
	Feeder				Black Riv. can.	708
	Towpath bridge					
235	James street, Rome					
236	Washington street, Rome					
237	George street, Rome					
238	Jay street, Rome					
	Feeder				Wood creek.	125
	Tow path bridge and drop,					
239	Doxtater avenue					

DIVISION.

No. of bridges, E. to W.	LOCATION OR NA TURE	ES BETWEEN NUMBERS OF BRIDGES.				
		CULVERTS.		Waste w'r, length of waste.	FEEDERS TO CANAL.	
		Stone or composite	Number & span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
				Ft.In.		
240	Watertown & Rome					
241	Corcoran					
	Culvert	Com'site	1 of 2½ x 2½			
242	Fort Bull					
	Waste weir			98 6		
	Culvert, Fort Bull	St. arch.	1 of 8			
	Culvert east of Haw	St. arch.	1 of 4			
243	Hawley's					
	Culvert	Com'site	1 of 3 x 2½			
244	Herrig					
	Culvert, Stony creek	St. arch.	1 of 12			
245	Old towpath bridge					
	Culvert	St. arch.	1 of 4			
246	Tuttle					
	Culvert	Com'site	1 of 2½ x 2½			
	Culvert	Com'site				
247	New London					
	Culvert	Com'site	1 of 2½ x 2½			
	Culvert	Com'site	1 of 2½ x 2½			
	Culvert	Com'site	1 of 2½ x 2½			
248	Castle					
249	Joslin (private)					
250						
251	Lewis (private)					
	Culvert	Com'site	1 of 2½ x 2½			
252	Williams					
	Culvert	Com'site	3 of 3 x 2½			
253	Lawton's					
	Waste weir (berm)			69 3		
	Culvert	Com'site	3 of 3 x 2½			
	Oneida Lake canal,					

No. of bridge		.	No. and width of roadways.	Dimensions.	Remarks.
			Ft. In.	Ft.	
1....	Towing path	L.	1 of 13 4		
	Culvert under c				Stone arch.
2....	Aqueduct road	A.	1 of 16 6		
	Guard gates				Stone with
	Wing dam				Cribs of timber and stone.
	Old lock			15 x 90	Old Erie canal lock.
1....	P. Ender's road	A.	1 of 12 3		
	Guard lock			15 x 90	Old Erie canal lock.
2....	Ora guard lock	A.	1 of 12		
	Dam across cre				Stone on timber foundation.
1....	Towing path	A.	1 of 15		Over drop into canal.
	Culvert			Box 2 x 2	Composite.
2....	Crouse's footro	A.	1 of 6		Private on boats.
3....	Winne farm	A.	1 of 11		
4....	J. W. Hawn	A.			Private on boats.
	Culvert			Box 2 x 2	Composite.
5....	Winne farm	A.	1 of 11		
6....	Hiram Snell fa	A.	1 of 11		
7....	Wheeler's foot				Private.
8....	Smiths' farm	A.	1 of 11		
9....	Van Alstyne's	A.	1 of 11		
10....	Van Alstyne's				Private on boats.
11....	Shule's farm	A.	1 of 11		
12....	Green's farm	A.	1 of 11		
	Culvert under		1	6 of 4 x 4	Stone box.
13....	Green's farm	A.	1 of 11		
14....	Staunton's far	A.	1 of 11		
15....	Fox's farm	A.	1 of 11		
	Bulkhead with				
	Stone dam, 360				9.87 feet above canal bottom.
1....	Tow path draw				
	Stone aqueduct			47, 69, 46½	Segmental arch.
2....	Street bridge,				
3....	Ann street, He		2		
4....	Mill street		2 of 11		
1....	Tow path brid		1 of 16		
2....	Road bridge, s				Versed line 6 feet.
	Bulkhead with				
	Stone dam on c				Top 9 feet above canal bottom.

DIVISION.

No. of bridges, E. to W.	LOCATION OR N TU	TURES BETWEEN NUMBERS OF BRIDGES.					
		ot openings.	CULVERTS.		Waste w'r, length of wastement.	FEEDERS TO CANAL.	
			Stone or composite	No. and span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
	REPAIR SE				Ft. in.		
1	Oneida Lake cana						
	Section No. 135		Com'site	1 of 3 ft			
2	Stark's						
	Section No. 135		Com'site	1 of 3 ft			
3	Dunbarton						
	Section No. 136		Com'site	1 of 3 ft			
	Section No. 136		St. box.	1 of 2 ft			
4	Loomis'						
	Section No. 137		St. box.	1 of 2 ft			
5	State bridge						
	Section No. 137		Com'site	1 of 3 ft			
	Section No. 137		St. arch.	1 of 4 ft			
	Section No. 137		St. arch.	1 of 4 ft			
	Brundy brook		St. arch.	1 of 12 ft			
6	Durhamville						
	Section No. 139		St. arch.	1 of 4 ft			
7	Durhamville						
	Oneida creek		St. arch.	2 of 26 ft			
	Oneida creek				temp.		
8	Durhamville						
						Oneida.	13.50
	Cowassillon		Com'site	10 of 4 ft			
	Section No. 141				100		
	Cowassillon					Cowassillon c'k	Not det.
9	Lenox basin						
	Section No. 144		Com'site	2 of 3 ft			
10	Peterborough stre						
	Section No. 145		St. arch.	2 of 8 ft			
11	Main street, Cana						
	Section No. 146		Com'site	1 of 3 ft			
12	Bruce bridge						
13	Beebee's bridge						
	Section No. 147		Com'site	3 of 3 ft			
14	Owlville						
	Section No. 148		Com'site	3 of 3 ft			
15	Town line						
16	New Boston						
17	Canaseraga						
	Canaseraga		Com'site	10 of 4 ft			
18	Chittenango						
	Chittenango					Chit'nango c'k	*30.35 †23.51
	Chittenango creek						
19	Bolivar						
	Section No. 152		St. arch.	1 of 5 ft			
20	West of Bolivar						
21	Pool's brook						
22	Kirkville						
	Section No. 155		St. arch.	1 of 3 ft			
23	Manlius Center						
24	Rotwonis						
	REPAIR SE						
	Limestone creek					Limestone c'k.	500
25	Limestone feeder						
	Limestone creek						
26	Pratt's landing						
	Butternut creek						
	Butternut creek					Orville.	500
27	Orville feeder						
28	Thompson's						
	Lodi, No. 47						
29	Lodi street, Syrac						
	Lodi, No. 48						
30	William street, Sy						

RES BETWEEN NUMBERS OF BRIDGES.

No. of bridges, E. to W.	LOCATION OR NAM TURES	Culverts.		Waste w'r, length of wastement.	Feeders to Canal.	
		Stone or composite	Number & span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
				Ft.		
	Syracuse, No. 49					
31	McBride street, Syra					
32	Lock street, Syracuse					
33	East towing path					
34	West towing path					
35	Warren street, Syrac					
36	Salina street, Syracu					
37	Clinton street, Syrac					
38	Franklin street, Syra					
	Onondaga creek	St. arch.	3 of 22 ft			
39	West street, Syracus					
	R. R. basin			100		
40	Geddes street, Syrac					
	Section No. 170	St. arch.	1 of 3 ft			
41	Genesee street, Ged					
42	Salina road					
	Section No. 173	St. arch.	1 of 3 ft			
43	Lake road					
	Section No. 173	St. arch.	1 of 3 ft			
44	East of lock 50					
	Section No. 175	St. arch.	2 of 4 ft			
	REPAIR SECTI					
	Lift lock No. 50					
45	Gere's					
46	Belbisk					
	Section No. 177	St. arch.	1 of 3 ft			
47	Amboy					
	Nine Mile creek	Com'site				
	Section No. 179	Com'site	1 of 3½ ft			
	Nine Mile creek				Camillus.	Not det.
48	Camillus Landing					
49	Newport					
50	Canton					
	Culvert	Com'site	1 of 3 ft			
51	Peru					
	Feeder				Carpenter br'k.	Not det.
52	Carpenter brook					
	Carpenter brook	Com'site	3 of 4 ft			
	Carpenter brook			80		
	Carpenter culvert	Com'site	1 of 3½ ft			
53	Jordan, East					
	Skaneateles creek	Com'site				
	Feeder				Jordan.	Not det.
54	Main street, Jordan					
55	Daggett's					
	Lock No. 51					
	Section No. 189	St. arch.	1 of 6 ft			
56	Cold Spring					
57	Bennett's					
	Culvert	Com'site	1 of 3 ft			
58	Dill's					
	Culvert	St. arch.	1 of 4 ft			
	Culvert	Com'site	2 of 3 ft			
59	St. John's					
60	Young's					
	Culvert	Com'site	1 of 4 ft			
	Waste weir			40		
61	Giles'					
	Section No. 193	Com'site	1 of 3 ft			
62	Main street, Weeds					
	Section No. 193	Com'site	1 of 3 ft			
63	Hamilton					
	Centerport	Com'site	1 of 3 ft			

DIVISION.

No. of bridges, E. to W.	LOCATION OR NA TURI	RES BETWEEN NUMBERS OF BRIDGES.					
			Culverts.		Waste w'r, length of wastement.	Feeders to Canal.	
			Stone or composite	No. and span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
					Ft In.		
64	Centerport						
	Section 196.		Com'site	2 of 3 ft.			
	Section 197.		St. arch.	1 of 6 ft.			
65	Utica street, Port I						
66	Owasco street, Port						
67	Main street, Port B						
	Port Byron aqueduc		Com'site				
68	Canal street, Port B						
	Port Byron, lock 52						
69	Section No. 198.						
	Section No. 200, cul		Com'site	1 of 4 ft.			
70	Section No. 200.						
	Crain Brook aquedu						
71	Clapp's b'dg.						
	Section 201, culvert		St. arch.	1 of 4 ft.			
72	Main street, Monte						
73	Foot street, Montez						
	Section 201, culvert		St. arch.	1 of 4 ft.			
74	Clark's bridge						
	Seneca river aquedu						
75	May Point						
	Section 204, culvert		Com'site	2 of 3 ft.			
	Section 206, culvert		do	2 of 3 ft.			

DIVISION.

No. of bridges, E. to W.	LOCATION OR NA TUR	RES BETWEEN NUMBERS OF BRIDGES.				
		Culverts.		Waste w'r. length of wastement.	Feeders to Canal.	
		Stone or composite	Number & span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
1	Road bridge in W					
	East line section 2					
	2 culverts, section	Com'site	3			
2	Pit lock bridge, se					
	Box culvert, sectio	Stone...	3			
	2 arch culverts, se	do	4 & 6 chord			
3	Waldruff's bridge,					
4	N. Y. Central R.					
	Arch culvert, secti	Stone...	6 chord			
	Arch culvert, secti	do				
5	Glasgow street, Cl					
	Arch culvert, secti	Stone...				
6	Sodus street bridge					
	Waste weir, sectio					
	Double arch culve	Stone...				
	Clyde, lock No. 56					
7	Adams' bridge, se					
8	Adams' bridge, se					
9	Adams' bridge, se					
	Culvert, section 2	Com'site	4			
	Waste weir (5 ope					
	Culvert, section 2	Com'site	2			
10	Lock Berlin bridge					
	Berlin lock No. 57					
11	Bridge on section					
12	Goetzman's bridge					
13	Coles' bridge, sect					
14	McDonald's bridge					
15	Teachout's bridge,					
	Waste weir, sectio					
	Culvert (arch), se	Stone...	10 chord			
16	Geneva street, Ly					
17	Church street, Ly					
18	Water street, Lyo					
	Lyons, lock No. 5					
19	Leach's, section 2					
	Mud creek aquedu					
	Culvert, section 2	Com'site	2 of 3 ft			
20	Coles' bridge, sect					
21	Coles' bridge, sect					
	Culvert, section 2	Com'site				
	Poorhouse, lock N					
	Culvert, section 2					
22	Morse's bridge, se					
	Culvert, section 2	Stone...	6 chord			
23	N. Y. Central R.					
24	Farm and change,	Stone...	4 chord			
	Culvert, section 2					
	Lower Lockville,					
25	Lockville bridge,					
	Middle Lockville.					
	Upper Lockville,					
26	Charles-st. bridge					
27	Vienna-st. bridge					
	Waste weir, secti					
	Arch culvert, sect	Stone...	8 chord			
28	Allerton's bridge,					
29	O'Rourke's bridge					
30	Sweezey's bridge,					
	Arch culvert, sec	Stone...	6 chord			
31	Palmer's bridge,					
32	Port Gibson bridg					
33	Galloway's bridge					
	Arch culvert, sec	Stone...	6 chord			

DIVISION.

No. of bridges, E. to W.	URES BETWEEN NUMBERS OF BRIDGES.						
	LOCATION OF	of open	Culverts.		Waste w'r length of waste.	Feeders to Canal.	
			Stone or composite	Number & span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
					Ft.		
	Arch culvert, s		Stone	12 chord			
34	East road, Pal						
35	R. R. avenue,						
	Arch culvert, s		Stone	6 chord			
36	Market street,						
37	Church street						
38	Farm and cham						
	Mud creek aqu						
39	Crandall's brid						
40	Spears' bridge,						
41	White's bridge,						
	Lower Macedo						
42	Road and chan						
	Culvert, section		Com'site	2 of 5			
	Double lock, N						
43	Macedon bridg						
	Discharge culv		Wood				
44	Freyers' bridge						
45	Wayneport brid						
46	Knappville bric						
	Thomas creek		Com'site	4			
47	Baker's bridge,						
48	Parker's bridge						
	Waste weir at				61		
49	Main street bri						
50	Fulham's bridg						
	Culvert, section		Com'site	2 of 2			
	Arch, section 2		Stone	4 chord			
51	Wapping bridge						
52	Weltsie's bridg						
	Stop gate, 40 f						
	Arch culvert, s		Stone	6 chord			
53	Bushnell's basi						
	Irondequoit cre		Stone	25 chord		118	
54	Cartersville bri						
	Stop gate, 40 fe						
	Waste weir, sec				69		
55	N. Y. Central I						
	Culvert, section		Com'site	2 openings			
56	Pittsford bridge						
	Culvert, section		Com'site	2 of 2			
57	Pittsford bridge						
58	Pittsford bridge						
	Arch culvert, s		Stone	12 chord			
	Arch culvert, s		Stone	4 chord			
59	Cook's bridge,						
	Pittsford, lock						
60	Springhouse bri						
	Arch culvert, s		Stone	4 chord			
61	Rowland's brid						
	Allen's creek c		Stone	12 chord			
	Berme waste w				20		
62	Donelley's brid						
	Culvert, section		Com'site	2 openings			
	Culvert, section		Com'site	2 openings		65	
63	Drake bridge,						
	Arch culvert, s		Stone	4 chord			
	Miller's, Lock						
64	Brighton bridge						
	Lock No. 57, se						
	Reservoir lock,						
	Berme waste w				15		
65	Culver bridge,						
66	Monroe street						

TURES BETWEEN NUMBERS OF BRIDGES.

No. of bridges, E. to W.	LOCATION OR T	ı openings.	CULVERTS.		Waste w'r, length of waste.	FEEDERS TO CANAL.	
			Stone or composite	No. and span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
					Ft.		
	Lock No. 69						
67	Nelson-st., Roch						
68	Alexander-st., R						
69	St. Paul-st., Ro						
	Box culvert, sect		Stone				
	Genesee river fee					Genesee river.	
	Waste weir, secti				60		
	Weigh lock, sect						
70	Change bridge, s						
71	Court street brid						
	Stone aqueduct,						
72	T. P. bridge on C						
73	Berme foot bridg						
74	Exchange-st. br.						
75	Fitzhugh-st. br.,						
76	Sophia-st. br., R						
77	Washington-st. b						
78	High street br.,						
79	Buffalo street br.						
80	Ford street br.,						
81	T. P. bridge over						
	Genesee Valley c					Genesee Valley canal.	
82	N. Y. C. R. R.,						
83	N. Y. C. R. R.,						
84	Allen-st. br., Ro						
85	Brown-st. br., R						
86	Jay street br., R						
87	Smith street br.,						
88	N. Y. C. R. R. to						
89	Lyell street br.,						
	Stop gate, 40 feet						
	Arch culvert, sec		Stone	10 chord			
	Box culvert, sect		do				
90	N. Y. C. R. R. to						
91	Farm and change						
	Arch culvert, sec		Stone	4 chord			
92	Scott's bridge, se						
	Arch culvert		Stone	4 chord			
93	Four mile grocery						
94	Rapalye's bridge						
95	Shuart's bridge						
	Arch culvert		Stone	7½ chord			
	Arch culvert		do	4 chord			
96	Grey's bridge						
	Arch culvert		Stone	4 chord			
97	Finley's bridge						
98	Eight mile grocer						
99	Cromwell's bridg						
	Arch culvert		Stone	4 chord			
100	Hiscock s bridge						
101	Norman's bridge						
	Old surface berme				30		
	Berme waste weir				6		
	Arch culvert		Stone	12 chord			
102	Spencerport bridg						
	Culvert		Com'site				
	Arch culvert		Stone	4 chord			
	Arch culvert		do	4 chord			
103	Webster's, east b						
	Arch culvert		Stone	4 chord			

DIVISION.

No. of bridges, E. to W.	LOCATION OR NAM TURES	RES BETWEEN NUMBERS OF BRIDGES.				
		Culverts.		Waste w'r, length of waste.	Feeders to Canal.	
		Stone or composite	Number & span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
				Ft.		
104	Webster's, west bridg					
105	Cressey's bridge					
	Arch culvert	Stone	6 chord.			
	Arch culvert	Stone	6 chord.			
106	Adams' basin bridge					
	Combined culvert and.	Doub. ar. 12 chord		29		
107	Doty's bridge					
	Culvert	Com'site	2 openings			
108	Chapin's bridge					
109	Cooley basin bridge					
	Culvert	Com'site	2 openings			
	Arch culvert	Stone	4 chord			
	Box culvert	Stone	3¼ chord			
110	Brockport bridge					
111	Brockport, Main stree					
	T. P. waste weir, sect			54		
	Culvert 1, west of wt	Wood	4 x 1			
	Culvert 2, west of wa	Com'site	3 x 3			
112	Danforth bridge					
	Culvert	Arch	6 ft.			
	Culvert	Com'site				
	Culvert	Com'site	4 ft.			
113	Miner's bridge					
114	County line bridge					
	Arch culvert	Stone	6 ft.			
	Arch culvert	Stone	4 ft.			
	Stop gate					
115	Salisbury's bridge					
	Berme waste weir			18		
	Box culvert (old cana	Wood				
	Arch culvert (old can	Stone.	11 ft.			
	Waste weir (old canal			68		
116	Frisbie's bridge (old c					
	Arch culvert	Stone	18 ft.			
117	Road bridge					
	Arch culvert	Stone	4 ft.			
118	McCarty's bridge					
	Arch culvert	Stone	4 ft.			
	Arch culvert	Stone	4 ft.			
119	Tuttle's bridge					
	Stop gate					
120	Carleton's bridge					
	Arch culvert	Stone	10 ft.			
121	Hulberton bridge					
	Culvert	Stone	4 ft.			
	Culvert and waste we	Stone, 2	12 ft.	24		
122	Brockville bridge					
123	Hindsburgh bridge					
	Arch culvert	Stone	6 ft.			
124	Transit bridge					
	Arch culvert	Stone	4 ft.			
125	Jaqueth's bridge					
	Arch culvert	Stone	4 ft.			
126	Bidwell's bridge					
	Box culvert	Stone	2 x 4			
127	Brailey's bridge					
	Arch culvert	Stone	4 ft.			
128	Hall's bridge					
	Culvert and waste we	Stone, 2	12 ft.	92		
	Box culvert	Stone				
129	Ingersoll street bridg					
130	Batavia street bridge					
	Culvert	Com'site				

DIVISION.

RES BETWEEN NUMBERS OF BRIDGES.

No. of bridges, E. to W.	LOCATION OR NA TURE	Culverts.		Waste w'r, length of waste.	Feeders to Canal.	
		Stone or composite	No. and span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
				Ft.		
	Culvert	Com'site				
	Culvert	do				
	Culvert	do				
131	Lattice's bridge					
	Culvert	Com'site				
132	Gaines' basin bridg					
	Culvert	Com'site				
	Arch culvert (Otter	do				
	Waste weir			83		
	Culvert	Com'site				
133	Eagle Harbor bridg					
	Arch culvert	Stone	8 ft.			
134	Starkweather's brid					
135	Allen bridge					
136	Burton bridge					
	Arch culvert	Stone	4 ft.			
	Culvert	Com'site				
137	Knowlesville bridge					
	Arch culvert	Stone	6 ft.			
	Arch culvert	do	4 ft.			
	Culvert	Com'site				
	Arch culvert (Fish	Stone, 2	12 ft.			
	Road culvert	do	20 ft.			
	Stop gate					
	Arch culvert	Stone	4 ft.			
138	Beal's bridge					
	Culvert	Com'site				
139	Hastings' bridge					
140	Aqueduct bridge, I	Stone	50 ft.			
	Waste weir (berme			51		
141	Church street (Med					
	Oak Orchard creek				Oak Orchard creek.	
142	Shelby street bridg					
	Stop gate					
	Culvert	Com'site				
	Arch culvert	Stone	6 ft.			
143	Mason's bridge					
	Arch culvert	Stone	4 ft.			
144	Shelby basin bridg					
	Arch culvert	Stone	12 ft.			
145	Town line bridge					
146	Coon's bridge					
	Culvert	Com'site				
	Culvert	St. box				
147	Vernon street brid					
148	Main street bridge,					
	Culvert	Com'site				
	Culvert and waste	Stone, 2	10 ft.	60		
	Culvert	Com'site				
149	Williams' bridge					
150	Watson's bridge					
	Waste weir, berme			16		
	Arch culvert (John	Stone	10 ft.			
151	Hurd's bridge					
	Arch culvert	Stone	4 ft.			
152	Hurd's bridge					
	Arch culvert	Stone	6 ft.			
153	Reynales basin bri					
	Culvert	Com'site				
154	Maybee's bridge					
	Maybee's arch cul	Stone	18 ft.			
	Waste weir, berme			36		

DIVISION.

URES BETWEEN NUMBERS OF BRIDGES.

No. of bridges, E. to W.	LOCATION OR NA TURE	CULVERTS.		Waste w'r, length of waste.	FEEDERS TO CANAL.	
		Stone or composite	Number & span of opening or arch.		Names.	Capacity, cu. ft. per min., dry season.
				Ft.		
	Culvert	Com'site				
155	Gas Port bridge					
	Culvert	Com'site				
156	Orangeport bridge					
	Culvert	Com'site				
	Arch culvert	Stone	4 ft			
	Arch culvert, Robi	Stone	6 ft			
157	Millard's bridge					
	Arch culvert	Stone	6 ft			
	Arch culvert	Stone	6 ft			
158	Wakeman's bridge					
	Stop gate					
	Arch culvert	Stone	4 ft			
	Arch culvert	Stone	4 ft			
159	Young's bridge. A					
160	Comstock's bridge					
161	Adams street bridg					
	Arch culvert	Stone	4 ft			
162	Chapel street bridg					
163	Exchange street bri					
	Culvert and waste	Stone	12 ft	96		
164	Cady's bridge, Loc					
165	N. Y. Central R. R					
	5 double locks					
166	Pine street bridge,					
167	Cottage street bridg					
168	Main street bridge,					
169	Transit street bridg					
170	Hitchins' street bri					
171	Hitchins'-st. bridge					
172	Heacox bridge					
	Path extension					
	Berme extension					
173	Hawley's path exte					
	Berme extension					
	Guard lock (Sulphu					
174	Bridge (guard lock)					
175	R. br. and T. P. ch					
176	do Pendle					
177	T. P. bridge, Tona					
178	T. P. bridge, Rans					
179	Pickards' bridge, T					
180	Canandaigua R. R.					
181	T. P. and R. bridg					
	Tonawanda creek d				215	
182	Buffalo and N. Fal					
183	Military road bridg					
184	Bridge over slip to					
185	Bridge, Seymour st					
186	Elevator bridge					
	State ditch culvert	Com'site				
187	T. P. change bridg					
188	Bates' Ferry bridge					
189	Cherry's bridge					
190	Limberg's bridge					
191	Scott's bridge					
	Culvert (Cornelius	Com'site				
192	T. P. change bridg					

N DIVISION.

No. of bridges, E. to W.	LOCATION OR NAM TURES	URES BETWEEN NUMBERS OF BRIDGES.					
			CULVERTS.			FEEDERS TO CANAL.	
			Stone or composite	No. and span of opening or arch.	Waste w'r, length of waste.	Names.	Capacity, cu. ft. per min., dry season.
					Ft.		
	Guard and bulkhead,	....	....	....	......		
193	Hamilton street brid	....	....	....	......		
194	Amherst street bridg	....	....	....	......		
195	Erie mills bridge (pr	....	....	....	......		
196	T. P. floating br., S	....	....	....	......		
197	Ferry street bridge a	....	....	....	......		
198	Buffalo and N. Falls	....	....	....	......		
199	T. P. change br., Y	....	....	....	......		
200	Genesee street bridg	....	....	....	......		
201	T. P. bridge on slip	....	....	....	......		
202	T. P. bridge on slip	....	....	....	......		
203	T. P. bridge on slip	....	....	....	......		
204	Erie street bridge, B	....	....	....	......		
205	Evans street bridge,	....	....	....	......		
206	Commercial street br	....	....	....	......		
207	Lloyd street bridge,	....	....	....	......		
208	Main street bridge,	....	....	....	......		
209	Washington st. bridg and Hamburg cans	....	....	....	......		
	Waste weir, 2 mile	....	Wood...	....	10		
210	Michigan street brid	....	....	....	......		
211	R. R. Main & Hamb	....	....	....	......		
212	Chicago-st. and Ham	....	....	....	......		
213	Louisiana-st. & Ham	....	....	....	......		
214	Perry street, Ohio sl	....	....	....	......		
215	Elk street, Ohio slip	....	....	....	......		
216	Ohio street (towing),	....	....	....	......		
217	Perry-st., Clark & S	....	....	....	......		
218	Elk.st., Clark & Ski	....	....	....	......		
219	Ohio.st., Clark & Sk	....	....	....	......		
220	Canal street, Comm'	....	....	....	......		
221	Prime street, Comm'	....	....	....	......		

	Culvert	....	Stone...	....	......		
	Clarissa street bridg	....	....	....	......		
	Culvert	....	Stone...	....	......		
	Guard lock........	....	....	....	......		
	Genesee river dam..	....	....	....	......		

State of New York.

No. 7.

IN ASSEMBLY,

January 6, 1863.

RULES AND ORDERS OF THE ASSEMBLY, 1862.

CHAPTER I.

OF THE POWERS AND DUTIES OF THE SPEAKER.

1. The Speaker shall take the chair each day at the hour to which the House shall have adjourned. He shall call to order, and, except in the absence of a quorum, shall proceed to business in the manner prescribed by these rules.

2. He shall possess the powers and perform the duties herein prescribed, viz:

1. He shall preserve order and decorum.

2. He shall decide all questions of order, subject to appeal to the House. On every appeal he shall have the right, in his place, to assign his reasons for his decision.

3. He shall appoint all committees, except where the House shall otherwise order.

4. He may substitute any member to perform the duties of the chair for a period not exceeding two consecutive legislative days, but for no longer period, except by special consent of the House.

5. When the House shall be ready to go into committee of the whole, he shall name a chairman to preside therein.

6. He shall certify the passage of all bills by the House, with the date thereof, together with the fact whether passed as majority, three-fifths or two-thirds bills, as required either by the Constitution or laws of this State.

7. He shall designate what persons are entitled to admission to the floor as reporters for the public press, not exceeding fifteen in number, to whom the Clerk shall issue his order for stationery, in the following manner, viz: One-half the amount when fifty days

of the session shall have expired, and the other half at the close thereof; but no reporter shall receive such order unless he has been regularly employed in the discharge of his duties as such reporter.

CHAPTER II.

OF THE ORDER OF BUSINESS.

3. The first business of each day's session shall be the reading of the Journal of the preceding day. and the correction of any errors that may be found to exist therein. After which, except on days and at times set apart for the consideration of general or special orders, the order of business, which shall not be departed from except by a unanimous vote of the House, shall be as follows, viz :

1. The presentation of petitions.
2. Reports of standing committees.
3. Reports of select committees.
4. Messages from the Governor.
5. Communications from State officers.
6. Messages from the Senate.
7. Notices.
8. Third reading of bills.
9. Introduction of bills.
10. Motions and resolutions.
11. Unfinished business of the general orders.
12. Special orders of the day.
13. General orders of the day;

But messages from the Governor, communications from State officers, messages from the Senate, and reports from the Committee on Engrossed Bills, may be received under any order of business.

CHAPTER III.

OF THE RIGHTS AND DUTIES OF MEMBERS.

4. Petitions, memorials, and any other papers addressed to the House, shall be presented by the Speaker, or by any member in his place.

5. Every member presenting a paper shall endorse the same; if a petition, memorial or report to the Legislature, with a brief statement of its subject or contents, adding his name; if a notice or resolution, with his name; if a report of a committee, a statement of such report, with the name of the committee and member

making the same; if a bill, a statement of its title, with his name, and the fact whether presented on notice or by unanimous consent.

6. Every member who shall be within the bar of the House when a question is stated from the chair, shall vote thereon, unless he be excused by the House, or unless he be directly interested in the question. No member shall be obliged to vote on any question unless within the bar when his name is called. The bar of the House shall be deemed to include only the Assembly Chamber within the rails.

7. Any member requesting to be excused from voting, may make, either immediately before or after the roll shall have been called, and before the result shall be announced, a brief statement of the reasons for making such request, and the question shall then be taken without debate.

CHAPTER IV.

OF ORDER AND DECORUM.

8. No member rising to debate, to give a notice, make a motion, or report, or to present a petition or other paper, shall proceed until he shall have addressed the Speaker, and have been recognized by him.

9. While a member is speaking, no member shall entertain any private discourse, or pass between him and the chair.

10. While the Speaker is putting a question, or a count is being had, no member shall speak or leave his place.

11. When a motion to adjourn is carried, the members and officers shall keep their seats and places, until the Speaker declares the House adjourned.

CHAPTER V.

OF ORDER IN DEBATE.

12. No member shall speak more than once to the same general question, without leave of the House, until every member desiring to speak on the question pending shall have spoken.

13. If any member, in speaking, transgress the rules of the House, the Speaker shall, or any member may, call to order; in which case the member so called to order shall immediately sit down, and shall not rise, unless to explain or proceed in order.

14. All questions relating to the priority of business, that is, the priority of one question or subject matter over another, under the same order of business, shall be decided without debate.

CHAPTER VI.

OF COMMITTEES AND THEIR DUTIES.

15. Standing committees, consisting, except where otherwise specified, of five members each, shall be appointed on the following subjects:

1. Ways and means, to consist of seven members.
2. Commerce and navigation.
3. Canals, to consist of seven members.
4. Railroads.
5. Banks.
6. Insurance companies.
7. Two-thirds and three-fifths bills.
8. Colleges, academies and common schools.
9. Grievances.
10. Privileges and elections.
11. Petitions of aliens.
12. Erection and division of towns and counties.
13. Claims.
14. Internal affairs of towns and counties.
15. Medical societies and colleges.
16. State charitable institutions.
17. Affairs of cities, to consist of seven members.
18. Affairs of villages.
19. Manufacture of salt.
20. Trade and manufactures.
21. State prisons.
22. Engrossed bills.
23. Militia and public defense, to consist of seven members.
24. Roads and bridges.
25. Public lands.
26. Indian affairs.
27. Charitable and religious societies.
28. Agriculture.
29. Public printing.
30. Expenditures in the Executive Department.
31. Expenditures of the House.
32. Judiciary, to consist of seven members.
33. Federal relations, to consist of seven members.

16. It shall be the duty of each of the several committees to inquire into the matter indicated by its name, and to report thereon

to the House any information, and any bill or resolution which it may deem conducive to the public good.

17. It shall be the duty of the Committee on Ways and Means to examine into all the departments of the government, whether Executive, Legislative, Judicial or otherwise, where salaries or emoluments are given; to examine, ascertain and report to the House what officers can be dispensed with, and what salaries or emoluments can be reduced, and how far consistent with the public good; and to take such action in regard to section eight of article seven of the Constitution of this State as may be requisite.

18. It shall be the duty of the Committee on Two-thirds and Three-fifths Bills to carefully examine all bills coming within the ninth section of the first article, and the 14th section of article seven of the Constitution of this State; and when any bill shall have passed in committee of the whole House, on which the Speaker may entertain doubts whether it comes within the provision of either of the said sections, it shall be referred to the said committee to examine and report thereon, before the question on the final passage shall be taken.

19. The Committee on Engrossed Bills shall carefully examine, in the order in which they shall be directed by the House, to be engrossed for a third reading, all bills so engrossed, and see that the same are correctly engrossed, and they shall report the same in like order to the House before they are read the third time.

20. It shall be the duty of the Committee on Public Printing to examine and report on all questions of printing referred to them, and to state an approximate estimate of the cost in the particular case referred, when practicable; to examine, from time to time, and ascertain whether the prices charged for printing are in conformity to the contract therefor, and whether it is done in conformity to the orders of the House, and without unreasonable delay; to ascertain and report what number of copies ought usually to be printed, and how distributed; and to report to the House, from time to time, any measure they may deem useful for the economical and proper management of the public printing.

21. It shall be the duty of the Committee on Expenditures of the House, and in the Executive Department, severally to inquire into the said expenditures, and whether the same have been made in conformity to law, and whether proper vouchers exist for the same, and whether the funds provided for the purpose are econo-

mically applied, and to report, from time to time, such provisions, laws and regulations as may conduce to economy, and secure the faithful disbursement of the moneys appropriated by law.

22. No report shall be received from the Committee on Claims, unless a written statement, setting forth the reasons in brief for the action of such committee, shall accompany such report.

23. No papers now on the files of this House, which have been reported upon adversely by a Committee on Claims, shall be taken therefrom unless the claimant shall present a petition, stating in what manner the committee have erred in their report, or that new evidence has been discovered since the report, and setting forth the new exidence in the petition.

CHAPTER VII.

OF THE GENERAL ORDERS AND SPECIAL ORDERS.

24. The matters referred to the committee of the whole House shall constitute the general orders, and their titles shall be recorded in a calendar, kept for that purpose by the Clerk, in the order in which they shall be referred severally.

25. The business of the general orders shall be taken up in the following manner, viz: The Clerk shall announce the title of each bill, or other matter, as it shall be reached in its order; whereupon it shall be taken up on the call of any member, without the putting of a question therefor; but if not so moved, it shall lose its precedence for the day. And whenever three bills have been thus moved, the House shall go into committee of the whole upon them without further order. But no bill or other matter shall be taken out of its order, except by vote of two-thirds of the members present, nor shall any unprinted bill be taken up unless by order of the House, on one day's notice thereof.

26. Tuesday and Thursday of each week shall be set apart especially for the consideration of the general orders; but they may be considered on any other day when reached in their order.

27. Each member shall be furnished daily with a printed list of the general orders, which shall be kept on his files by the Sergeant-at-Arms, in the same manner as other printed documents.

28. Any matter may be made a special order for any particular day, by the assent of two-thirds of the members present. But it shall not be in order to make any matter a special order from day to day; and no more than three bills or other matters shall be

made the special order for the same day. No special order shall be postponed or rescinded except by vote of two-thirds of the members present.

CHAPTER VIII.

OF THE COMMITTEE OF THE WHOLE.

29. The same rules shall be observed in committee of the whole as in the House, so far as the same are applicable, except that the previous question shall not apply; nor shall the number of times a member may speak be limited, and except that the yeas and nays shall not be taken.

30. A motion to rise and report progress shall be in order at any stage, and shall be decided without debate.

31. Bills and other matters shall be considered in committee of the whole in the following manner, viz: They shall be first read through, if the committee so direct; otherwise, they shall be read and considered by sections, leaving the title to be last considered. All amendments, in their proper connection, shall be reported to the House by the chairman.

32. If at any time when in committee of the whole House, it be ascertained that there is no quorum, the chairman shall immediately report that fact to the Speaker.

CHAPTER IX.

OF BILLS.

33. No bill shall be introduced in the House except in one of the following modes, viz:

1. By leave of the House, on one day's previous notice being given of the motion therefor, which notice must specify the subject matter of the bill.
2. By unanimous consent of the House.
3. By report of a committee.
4. By order of the House.
5. By message from the Senate.

34. No private bill shall be introduced but upon a memorial or petition presented to the House and signed by the party or parties praying for the passage of the same, except by order of the House.

35. The title of all bills introduced shall state concisely the subject matter of such bills.

36. Every message from the Senate communicating any bill for the concurrence of the House, shall, with the accompanying docu-

ments, if any, be referred to a standing or select committee to consider and report thereon, and every such message communicating an amendment, shall take a like reference except the House shall otherwise order.

37. All bills, whether introduced in the House or communicated by message from the Senate, shall, after their second reading, be referred to a standing or select committee, to consider and report thereupon. Such committee may report any bill, either with or without amendments, or they may report against the same. All bills fovorably reported shall, if the report be agreed to, be committed to the committee of the whole; but where a bill has been reported adversely, and such report shall be agreed to by the House, it shall not go upon the general orders, but shall be considered as rejected.

38. Bills reported by the committee of the whole shall be subject to debate before the question to agree with the committee in their report is put; but such amendments only shall be in order as were offered in committee of the whole. And where a bill shall be reported by the committee of the whole, with the enacting clause stricken out, and the report shall be agreed to by the House, it shall be considered as rejected.

39. Every bill shall receive three separate readings previous to its final passage, and the third reading shall be on a day subsequent to that on which the bill passed in committee of the whole, unless the House, by a vote of two-thirds of the members present, shall direct otherwise.

40. No bill shall be ordered to a third reading until it has been considered in the committee of the whole, nor shall it be in order to refer any bill to a select committee to report complete.

41. All bills shall be engrossed in the order in which they have been directed by the House to be engrossed.

42. No bill originating in the Assembly shall be put upon its third reading until it shall have been reported by the Committee on Engrossed Bills as correctly engrossed. Nor shall any bill be read the last time, unless it shall have been once printed, without the consent of two-thirds of the members present.

43. The third reading of bills shall take place in the order in which they have been ordered to a third reading, unless the House, by a vote of two-thirds of the members present direct otherwise, or the bill to be read be laid on the table. And the question on the final passage of every bill shall be taken immediately after

such third reading, and without debate, unless the bill shall be ordered to be recommitted.

44. The same vote that would be required to pass any bill shall be requisite to carry a reconsideration thereof. But the final vote upon the passage of any bill creating, continuing, or renewing any incorporation otherwise than municipal, shall not be reconsidered whenever such bill shall be rejected on its last reading.

45. A register shall be kept by the clerk of all bills introduced in the House or transmitted for concurrence from the Senate, in which shall be recorded, under appropriate heads, the progress of all such bills, from the date of their introduction to the time of their transmission, if Assembly bills, to the Governor, or if Senate bills, their return to the Senate.

CHAPTER X.

OF MOTIONS AND THEIR PRECEDENCE.

46. When a question shall be under consideration, no motion shall be received except as herein specified; which motions shall have precedence in the order stated, viz:

1. For an adjournment of the House.
2. A call of the House.
3. For the previous question.
4. To lay on the table.
5. To postpone indefinitely.
6. To postpone to a day certain.
7. To go into committee of the whole on the pending subject immediately.
8. To commit to a committee of the whole.
9. To commit to a standing committee.
10. To commit to a select committee.
11. To amend.

47. The motion to adjourn and to lay on the table, shall be decided without amendment or debate. The several motions to postpone or commit shall preclude all debate of the main question.

48. Every motion or resolution shall be first stated by the Speaker, or read by the Clerk, before debate and immediately before putting the question. And every motion, except those specified in subdivisions one to ten, inclusive, of the forty-sixth

rule, shall be reduced to writing, if the Speaker or any member desire it.

49. After a motion shall be stated by the Speaker, it shall be deemed in the possession of the House, but may be withdrawn at any time before it shall be decided or amended.

50. The motion to adjourn shall always be in order.

51. No motion for reconsideration of any vote shall be in order unless on the same day or the following legislative day to that on which the decision proposed to be reconsidered took place; nor unless one of the majority shall move such reconsideration. A motion for reconsideration being put and lost shall not be renewed; nor shall any subject or vote be a second time reconsidered, without unanimous consent.

CHAPTER XI.

OF RESOLUTIONS.

52. The following classes of resolutions shall lie over one day for consideration, after which they may be called up, as of course, under their appropriate order of business.

1. All concurrent resolutions.

2. Resolutions containing calls for information on the Executive Department.

3. Resolutions giving rise to debate; except such as relate to the disposition of matters immediately before the House, such as relate to the business of the day on which they are offered, and such as relate to adjournments or taking a recess.

53. All resolutions for the printing of an extra number of any document, paper or bill, shall be referred, as of course, to the standing Committee on Public Printing to consider and report thereon.

54. All other resolutions calling for or leading to expenditure, for the uses of the Legislature, shall be referred to and reported on by the Committee on the Expenditures of the House, unless the House shall designate some other committee.

CHAPTER XII.

OF THE PREVIOUS QUESTION.

55. The "previous question" shall be as follows: *Shall the main question be now put?*" and until it is decided shall preclude all amendments or debate. When on taking the previous question, the House shall decide that the main question shall not now

be put, the main question shall be considered as still remaining under debate. The "main question" shall be on the passage of the bill, resolution or other matter under consideration; but when amendments are pending, the question shall first be taken upon such amendments in their order; and when amendments have been adopted in committee of the whole, and not acted on in the House, the question shall be taken upon such amendments in like order, and, if the previous question has been ordered, without further debate or amendment.

CHAPTER XIII.

OF THE ASSEMBLY CHAMBER AND THE PRIVILEGES OF ADMISSION TO THE FLOOR THEREOF.

56. The use of the Assembly chamber may be granted to the State Agricultural Society, the State Medical Society and such other societies as are required by law to report to the Legislature. No application for the use of the chamber for any other purpose, shall be entertained without the unanimous consent of the House.

57. The following classes of persons, and no others, may be admitted to the floor of the House during the session thereof, viz:

1. The Governor and Lieutenant Governor.
2. The members of the Senate.
3. The State officers.
4. The Regents of the University.
5. Persons in the exercise of an official duty.
6. The reporters for the press. (*See subdivision* 7, *of Rule* 2.)
7. Ex-Speakers of the Assembly.

CHAPTER XIV.

MISCELLANEOUS PROVISIONS.

58. In all cases of the absence of a quorum during the sessions of the House, the members present may take such measures as they shall deem necessary to secure the presence of a quorum, and may inflict such censure or pecuniary penalty as they may deem just, on those who, on being called on for that purpose, shall render no sufficient excuse for their absence.

59. When the House shall be equally divided on any question, including the Speaker's vote, the question shall be deemed to be lost.

60. If any question contain several distinct propositions, it shall

be divided by the chair, at the request of any member, but a motion to strike out and insert shall be indivisible.

61. In all cases where a bill, order, motion, or resolution shall be entered on the Journal, the name of the member introducing or moving the same, shall also be entered on the Journal.

62. The yeas and nays may be taken on any question whenever so required by any ten members (unless a division by yeas and nays be already pending), and when so taken shall be entered on the Journal.

63. The Journal of each day's proceedings of the House shall be printed, so that it shall be laid on the tables of members within two days after its approval, and the Sergeant-at-Arms shall cause the printed journals to be kept on files in the same manner as other printed documents.

64. No standing rule or order of the House shall be changed, suspended, or rescinded, unless one day's notice shall have been given of the motion therefor, nor shall such change be made unless by a vote of a majority of all the members elected to the Assembly. But such notice shall not be necessary on the last day of the session. The notice and motion shall in all cases state specifically the object of the suspension, and every case of suspension of a rule under such notice and motion shall be held to apply only to the object specified therein. Nor shall the forty-second rule, so far as it applies to two-third bills, be altered, rescinded, or suspended, unless two-thirds of all the members elected to the House agree to such alteration, rescinding, or suspension.

ANNUAL REPORT

OF THE

STATE ENGINEER AND SURVEYOR,

ON THE

CANALS OF NEW YORK,

FOR THE YEAR 1862.

Transmitted to the Legislature January 23, 1863.

ALBANY:
COMSTOCK & CASSIDY, PRINTERS.
1863.

State of New York.

No. 8.

IN ASSEMBLY,

January 23, 1863.

ANNUAL REPORT

OF THE STATE ENGINEER AND SURVEYOR, ON THE CANALS OF NEW YORK, FOR THE YEAR 1862.

OFFICE OF THE STATE ENGINEER AND SURVEYOR,
ALBANY, *January* 23, 1863.

To the Honorable the Legislature of the State of New York:

I have the honor herewith to transmit to the Legislature my Annual Report on the canals of this State, for the year ending September 30, 1862.

Yours, respectfully,

WILLIAM B. TAYLOR,
State Engineer and Surveyor.

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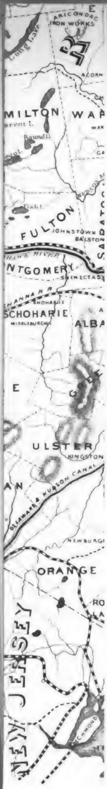
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REPORT.

Office of the State Engineer and Surveyor,
Albany, *December* 10*th*, 1862.

To the Hon. the Legislature of the State of New York:

The State Engineer and Surveyor has the honor to submit his Annual Report on the New York State canals, for the fiscal year ending September 30th, 1862, as required by act, chapter 437, Laws of 1859.

The canals are in three divisions, corresponding to each Canal Commissioner's division, and are designated the Eastern, Middle and Western Divisions.

The Eastern Division embraces the enlarged Erie canal, from Albany to the Oneida Lake canal, at Higginsville, the Champlain canal, and the Black River canal, and River improvement.

The Middle Division embraces the enlarged Erie canal, from Higginsville to the east line of Wayne county, the Chenango, Oneida Lake, Oswego and Baldwinsville canals, the Oneida River improvement, the Seneca River towing path, the Cayuga and Seneca, Crooked Lake and Chemung canals and Cayuga inlet.

The Western Division embraces the enlarged Erie canal, from east line of Wayne county to Buffalo, and the Genesee Valley canal.

These divisions, during the last year, were in charge of division and resident engineers, up to September 1, 1862, pursuant to act, chapter 105, Laws of 1857, (amended,) and during the month of September they were placed in charge of engineers and assistant engineers, pursuant to act, chapter 169, Laws of 1862.

Under the former act, the engineers were paid out of construction funds entirely, whereas, under the latter one, they are paid wholly from repair funds.

The appointments of the engineers under both acts, were made by the Canal Board, and their location and duties prescribed by the State Engineer and Surveyor.

For the number of persons employed on the canals during the last fiscal year, reference is made to the reports of the engineers on the divisions, which follow this report.

Previous to September 1, although a large amount of work connected with the repairs of the canals was performed by the engineers, no portion of the cost was chargeable to repairs, but wholly paid from construction funds, whereas by the act before noted, their work is confined to repairs (ordinary and extraordinary) and their expenses paid from repairs funds.

A large proportion of expenditures of the Engineer Department, for the last year, has been incurred in closing up the final accounts of construction work, as required by act, chapter 169, Laws of 1862, which act provides that all the work on the State canals, except that on the Champlain canal, should be declared completed on the 1st day of September, and that the final accounts should be rendered as soon thereafter as might be.

The Eastern and Middle Divisions of the Erie canal, and the Oswego canal, except two contracts, sections 24. 25, 26, and part of 27, and sections 22 and 23, are completed, but a considerable amount of work on the Western Division yet remains to be done.

The estimated cost to complete the Western Division, upon the plans heretofore adopted by the Canal Board, (not including constructing 13 enlarged locks between Clyde and Buffalo,) is, according to estimate of O. W. Storey, engineer in charge, $170,000.

There are about 75 miles of enlarged canal on the Eastern Division constructed with slope walls, resting upon benches, on an average 4¼ feet above canal bottom. This plan of canal gives only 42 feet width on botton of canal, and which will admit only of the passage of two loaded boats (with draft of 5¾ feet) at one time. The present plan of the slope wall extending to canal bottom and giving a width of 56 feet, will permit the passage of three loaded boats.

It can be readily seen that with the business which the canals have sustained during the past season, the navigation of this narrow and contracted portion of the canals lying at the eastern end of the State, towards tide water, must have been attended with many difficulties.

As boats approach tide water more particularly in the fall of the year, near the close of navigation and during the formation of ice, it is at times impossible to pass sufficient water into the lower levels to sustain a depth of seven feet.

It will be necessary to remove these slope wall benches and construct the canals upon the present plan of enlargement, before many of the difficulties upon this portion of the canal will be obviated.

I would call especial attention to the level between locks Nos. 1 and 2, at Albany, which is constructed upon the old bench plan; loaded boats cannot approach within about 18 feet of the top angle of the banks on either side of the canal. The distance between the locks is about 75 chains;

from the weigh lock to lock No. 2, e berme side of the canal is occupied by lumber yards, d sundry slips are connected with the canal; on the wing-path side, for one-half the distance, are iron manu actories, &c., located within a few rods of the canal, so the when two boats are unloading at the same time, opposite o each other, there is not sufficient capacity remaining for he third boat to pass.

Upon a petition of the Board of T de and the lumber interest, in the city of Albany, a com ittee was appointed to examine the condition of the canal etween lock No. 1, at Albany, and lock No. 3, at West T oy. They reported in favor of reconstructing the level fro n lock No. 1 to lock No. 2, upon the present plan of enlargement, with side walls extending to canal bottom; one-half the distance to be constructed with slope walls, the balance with vertical walls, at a cost of $27,000.

It would be a very desirable improvement if the canal for the entire distance between Albany and lock No. 3, should be constructed upon the present plan of enlargement, particularly that portion through West Troy.

The construction of an enlarged lock at lock No. 2, is desirable, and is required by the business upon the canal at that location. At present there is but one enlarged lock. The doubling of the locks would materially facilitate the passage of boats.

De Ruyter reservoir is left incomplete; the work on the reservoir was suspended on the first of September. The attention of the Legislature is respectfully directed to this piece of work, that provision may be made for its early completion. The long level between Utica and Syracuse has, several times during the last season, required an additional supply of water. The completion of this reservoir would be a valuable auxiliary in furnishing the deficiency.

The completion of Chub Lake reservoir (originally contracted for in 1851) would be of great service in insuring a constant supply of water to the Black River and Erie canals, in a dry season, as well as furnishing an additional quantity to the Black River improvement.

The attention of the Legislature will undoubtedly be called to the construction of a weigh lock at Oswego; the reasons and necessities for the structure are given in full in the annexed report of J. P. Goodsell, the engineer in charge.

I would call particular attention to the same engineer's report in reference to a recommended change in the prism of the canal, east of Lodi locks, on the long level. When the full capacity of the locks is tested (which is frequently the case) it is not possible to obtain a sufficient supply of water at their head to maintain the required seven feet. In my opinion the plan proposed would, with the water from De Ruyter reservoir, remedy the evil, and make the improvement for many years demanded.

The season of navigation just closed, has shown conclusively, to my mind, the necessity of constructing double locks on the Western Division, where single ones now exist. Numerous delays have been caused in consequence of the frequent inability to pass boats through the single locks as fast as they arrive. This was seriously felt in August last, after the breach at Knowlesville, it being weeks instead of days, before the crowd of boats which had accumulated during the repairs, could be disposed of. At that time, boats were loaded daily at Buffalo, sufficient in number to occupy the locks fully, without any addition, from the delay. A law authorizing their construction, should be passed as early as possible, during your present session, that proposals may be received in time to contract for the work, so as to insure the delivery of all the materials necessary for their construction before the close of navigation in 1863, to the end that their completion and use may be realized at the opening of navigation in the spring of 1864. The estimated cost to construct the 13 single locks, (as per estimate of O. W. Storey, engineer in charge) is $412,000, and for guard lock at Black Rock, $35,000.

The Canal Board, in January, appointed a committee (on application of many citizens) to examine into the subject of constructing a weigh lock at Buffalo. Two reports were made, one for a lock to be located at Buffalo, to weigh loaded boats, and another to weigh light boats, to be located at Black Rock, near the guard lock. After deliberating upon the reports, both as to location and cost, and both for loaded and light boats, the board adopted a recommendation for the weigh lock for light boats. Below is the estimated cost to construct them:

Weigh lock for loaded boats at Buffalo	$80,000
do for light boats at Black Rock	22,000

The dam across the Genesee river, at the head of the feeder at Rochester, should be reconstructed. This feeder is very important in keeping up the water in the canal east of Rochester, when any breach or difficulty occurs west of that city. Since the original dam was washed away, its utility has been felt, especially during repairs of breaches on the western portion of our canals.

A concurrent resolution of the Legislature, at its last session, directed the State Engineer and Surveyor "to make an examination and survey of the Allegany river, from the termination and junction with the said river and the Genesee Valley canal, to the mouth of the Great Valley creek, past and near the crossing of the Buffalo and Bradford railroad, and to report to the next Legislature the practicability of making such slack-water navigation and the probable cost of the same."

The survey was not made as directed, no funds having been provided to defray the necessary expenses.

CHAMPLAIN CANAL.

The locks located at Fort Miller, Moses kill and Fort Edward, should be reconstructed at the earliest practicable period; they are in a very bad condition. During this session, funds should be provided for their reconstruction.

Plans, estimates and locations have been adopted by the Canal Board. Two of the locks are so located (Moses kill and Fort Edward) that they could be constructed during the season of navigation, without retarding the opening of the canal, as in the case of rebuilding other locks.

GLENS FALLS FEEDER.

Under act, chapter 213, Laws of 1860, it is required to "improve the Champlain canal and Glens Falls feeder, in such manner as to give in its entire length a uniform depth of five feet of water, and a uniform width of 35 feet on bottom, &c., and to stop leaks in Glens Falls feeder."

The Canal Board, in December, 1861, adopted a plan for improving and stopping leaks in the feeder. The plan provided for excavating the bottom of the feeder through the limestone ledges, where the leaks occurred, one foot, and replacing with concrete masonry, and the construction of vertical walls in cement, upon the sides of the feeder.

Large sums had previously been expended upon the feeder to prevent the leaks, but to no purpose, apparently. A portion of the work, under the present plan, has been completed and has thus far proved to answer successfully the designs of the projectors.

Chenango Canal.

During the last season a committee was appointed by the Canal Board, to examine the Kingsly Brook reservoir, and report its condition. The report stated that the lands in the reservoir, formerly flowed by water, are occupied by the heirs of the original owners, subject to the rights of the State. In two instances warranty deeds have been given, in each of which a reservation of the State's rights in the land is inserted.

The reservoir, as originally constructed, would furnish 93,812,000 cubic feet of water, but to construct as originally intended, would furnish 158,812,000 cubic feet.

The committee reported in favor of the reconstruction of the reservoir, and recommended that the Commissioner in charge notify the occupants of the land contained in the reservoir, of the action of the Board. The report was adopted.

Genesee Valley Canal.

It will soon be found necessary to take some action in reference to an additional supply of water on the Genesee Valley canal. At several points during the season of navigation just closed, a deficiency has existed, to wit: At Mt. Morris, Dansville, Oramel and the Cuba Summit. For detailed particulars in reference to each location mentioned, see O. W. Storey's report, annexed.

Documents accompanying the Annual Report on Canals.

Table No. 1, (following the reports of the engineers upon the three divisions) shows the number and compensation of engineers and employees in the Engineer Department of the New York State canals, together with incidental expenses for the fiscal year ending September 30, 1862.

Table No. 2, shows the length, in miles, number of structures, character of work, estimated cost at contract prices, amount of work done during fiscal year ending September 30, 1862; whole amount done, including interest and work completed or settled, with the characteristic details of contracts existing during the year ending September 30, 1862, upon the New York State canals.

Table No. 3 shows amount of work done under supervision of the Engineer Department, on repairs under contract, and miscellaneous repairs upon the New York State canals during fiscal year ending September 30, 1862.

Table No. 4, shows number of section, names of contractors, length in miles, amount per annum, and location of repairs, sections under contract, on the New York State canals.

Table No. 5 is a statement of all the feeders to the Erie canal, together with the quantity of water furnished by each, per minute, during dry season.

DOCUMENTARY SKETCH OF NEW YORK STATE CANALS.

S. H. Sweet, Esq., Deputy State Engineer and Surveyor, has prepared a documentary sketch of the canals in this State, commencing at the earliest period of their history in this country and extending to September 1st, 1862, the date at which the canals were declared completed, by act, chapter 169, Laws of 1862. Considering the limited time of three months, allotted to the compilation of this report, it will be admitted that great credit is due Mr. Sweet for the valuable and interesting facts therein contained. A perusal of the document will show what close application and knowledge of the subject have been required.

REPAIRS OF CANAL BY CONTRACT.

The present system of letting the repairs of the canals by contract is not so effective in its operations as was anticipated by the framers of the law under which it was authorized.

The original condition of the canals is not maintained, but on the contrary, nearly, if not every superintendent's section, after being under contract for a few years, is not in as good condition as it was while in the hands of the State officers. Having been for many years engaged upon the canals, both in charge of construction and repairs, my opportunities for observing the effect of the present system have given me a correct knowledge of its effects, and have led me to the opinion that a change should be made, whereby the canals could be kept in good condition and their structures maintained and preserved.

In my judgment the true policy of the State would be to adopt that mode of repairing the canals which would keep them in the best order at the least expenditure.

Perhaps it may be said that no plan can be adopted whereby these repairs may be performed for a less sum than the present one, but a system can be devised by which the canals may be kept in thorough order and their numerous and costly mechanical structures be perpetuated and preserved in that perfect condition which the interests of the State and of navigation demand.

In the present system there are many objectionable points which the one I intend to recommend will not include.

Repairs are now let for a gross sum per annum, for all work of whatever nature, that may be necessary to keep the canals in navigable order, so that the interest of the contractor is not to perform the work necessary for the well-being of the canals, but to do as little as possible, since all the outlay is sustained by himself, and all work remaining undone, redounds to his profit, while the State sustains the loss.

As a consequence, most of the repairs, particularly of mechanical structures, are of a temporary instead of a permanent nature; this fact is well known to all who are in any manner familiar with the subject, and is constantly made the theme of comment by those who are deeply interested in the welfare and prosperity of our canals.

While this system is saving large sums to the State, it is also leaving equally larger ones yet to be expended, to render the canals in the same condition they held before being placed under contract.

It is not sufficient to say that the present system is stringent and covers all points, provided the contracts are literally and strictly carried out, for it is a fact beyond dispute, that no Canal Commissioner has yet been able to enforce all the provisions contained in the contracts, nor can he ever fully and practically do so, because the contractor's interests and that of the State are antagonistic, the one being anxious to do as little work as possible, while the other desires all that may be deemed necessary to maintain and keep the canals in proper navigable condition.

Another bad failure in this system is, that no two Canal Commissioners conduct their repairs in a similar manner, or construe alike the requirements of the contract.

The power of the Commissioner being absolute, each officer has full control, not only of the contract as relating to the work, but often of the contractor himself. The Contracting Board has no power except to advertise, let and abandon the contracts; the construction of them in all their provisions, rests wholly with the Commissioner in charge of the division upon which the contract may be located.

Out of this arises claims for all work done that may not be stipulated in the contract, and as the amount claimed by the contractor may not be paid by the Commissioner, recourse is made by the former to the Legislature, under whose enactments grants and awards are often made.

Claims of this nature should be avoided, or if possible, rendered as few in number as may be.

Under present regulations, the contractors are required to keep the canals in the same condition in which they were originally constructed; consequently, in cases where the banks were made too light to sustain the pressure upon them, or were constructed of materials not impervious to those leaks which have subsequently endangered navigation, the contractor does not deem it his duty to strengthen the banks or arrest the leaks without claiming extra compensation, and in that opinion he is correct. Consequently in many cases these necessary repairs are unattended to, or if undertaken, are construed by him as *extra work*, and are paid for as such. A reference to former reports will show heavy expenditures for this class of work.

In order to avoid the frequent claims made by the contractor, for change of plan in mechanical structures, &c., a law was passed at the last session, prohibiting any such change from being made, but the law does not reach the point, and in many cases prevents necessary improvements being made, even where a change of plan would be cheaper and better. The intention of the framers was in a measure correct, but the law does not carry it out.

In fact, the present system of letting repairs by contract is very faulty, and continually brings the Commissioner and contractor into collision as to the construction of the contract, the one claiming that the work done is covered by the terms of the contract, the other arguing that *extra* *compensation* should be allowed. All such claims can be avoided and the necessary work be performed without the recurrence of these incessant and troublesome demands.

I recommend that a law be passed by your honorable body, authorizing the letting of canal repairs by contract, under regulations requiring that all work done, whether of earth, in its various classifications, or of stone, iron, wood, &c., be measured and paid for the same as in construction accounts; in this way the contractor will receive compensation for the actual amount of work done, and not be paid as at present, for work he does not perform.

By this method the canals can be kept in as good repair as it is possible to keep them, while all mechanical structures will be preserved and maintained at the lowest expense and thus attain the object desired. It must be admitted that the true economy and policy of the State call for the adoption of such measures in reference to repairs, as will maintain the canals in the best possible manner for the least outlay, as any sum less than one which will be sufficient for the payment of all necessary work, will not secure its performance. Very few if any of the repair contractors have suffered losses, although their contracts have been for sums less than one-half the fair compensation for such work, and in their appeals to the Legislature they usually succeed in obtaining such a construction of their contract as will include a large item of *extra work*.

Again, when directed by the Commissioner to do various kinds of repairs required by the contract, (and not complying with said requirements), all schemes are resorted to in order to prevent their contract being abandoned, while at the same time they are aiming to save the bond they deposited with the Department as a guarantee for the due performance of their work.

An adoption of the above recommendations will avoid all such cases, and relieve the Legislature from the numerous claims yearly presented for *extra compensation*, arising out of the present system of letting repairs.

In my opinion such a law would insure a prompt performance of all work required, and as the contractor would only be paid for work actually performed, the canals would be kept in a condition alike favorable to navigation and satisfactory to the State, while every desirable object contemplated by repair enactments would be fully secured.

Respectfully submitted.

W. B. TAYLOR.

DOCUMENTS

ACCOMPANYING THE ANNUAL REPORT OF THE STATE ENGINEER AND SURVEYOR.

anticipated by the framers of the law under which it was authorized.

The original condition of the canals is not maintained, but on the contrary, nearly, if not every superintendent's section, after being under contract for a few years, is not in as good condition as it was while in the hands of the State officers. Having been for many years engaged upon the canals, both in charge of construction and repairs, my opportunities for observing the effect of the present system have given me a correct knowledge of its effects, and have led me to the opinion that a change should be made, whereby the canals could be kept in good condition and their structures maintained and preserved.

In my judgment the true policy of the State would be to adopt that mode of repairing the canals which would keep them in the best order at the least expenditure.

Perhaps it may be said that no plan can be adopted whereby these repairs may be performed for a less sum than the present one, but a system can be devised by which the canals may be kept in thorough order and their numerous and costly mechanical structures be perpetuated and preserved in that perfect condition which the interests of the State and of navigation demand.

In the present system there are many objectionable points which the one I intend to recommend will not include.

Repairs are now let for a gross sum per annum, for all work of whatever nature, that may be necessary to keep the canals in navigable order, so that the interest of the contractor is not to perform the work necessary for the well-being of the canals, but to do as little as possible, since all the outlay is sustained by himself, and all work remain-

EASTERN DIVISION.

ENGINEER'S OFFICE, EASTERN DIVISION,
ALBANY, *October* 1, 1862.

HON. WILLIAM B. TAYLOR, *State Engineer and Surveyor:*

Sir—In accordance with the regulations established by your Department, under act, chap. 169, Laws of 1862, I have the pleasure of making the following

ANNUAL REPORT,

For the fiscal year ending September 30, 1862, for the Eastern Division of the New York State canals.

The canals embraced in this division are as follows:

	Miles.
Erie canal, from Albany to east bank of Oneida Lake canal	133.58
Albany basin	.77
Port Schuyler and West Troy side cuts	.35
Pond above Troy dam	3.00
Champlain canal and Waterford side cut	66.00
Glens Falls feeder and pond above dam	12.00
Black River canal	35.33
Black River feeder and pond above dam	12.09
Delta feeder	1.38
Improvement of Black river	42.50
Total, Eastern Division	307.00

There are also embraced in this division the following unnavigable reservoirs and feeders that supply water to the canals:

Reservoirs.

	Area of surface. Acres.	Average area. Acres.	Depth. feet.	Capacity. cubic feet.
Woodhull	1,236	1,118	18	876,550,000
*North Branch	423	277	28	310,000,000
South Branch	518	372	26	421,190,000
	2,177	1.767		1,607,740,000

*Can be filled twice during the year.

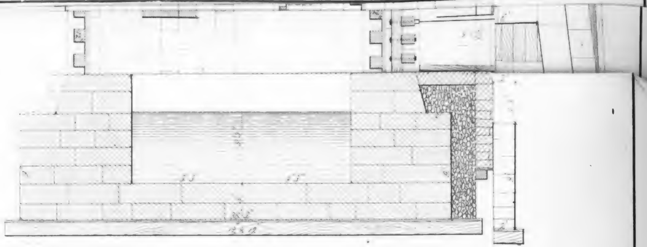
Out of this arises claims for all work done that may not be stipulated in the contract, and as the amount claimed by the contractor may not be paid by the Commissioner, recourse is made by the former to the Legislature, under whose enactments grants and awards are often made.

Claims of this nature should be avoided, or if possible, rendered as few in number as may be.

Under present regulations, the contractors are required to keep the canals in the same condition in which they were originally constructed; consequently, in cases where the banks were made too light to sustain the pressure upon them, or were constructed of materials not impervious to those leaks which have subsequently endangered navigation, the contractor does not deem it his duty to strengthen the banks or arrest the leaks without claiming extra compensation, and in that opinion he is correct. Consequently in many cases these necessary repairs are unattended to, or if undertaken, are construed by him as *extra work*, and are paid for as such. A reference to former reports will show heavy expenditures for this class of work.

In order to avoid the frequent claims made by the contractor, for change of plan in mechanical structures, &c., a law was passed at the last session, prohibiting any such change from being made, but the law does not reach the point, and in many cases prevents necessary improvements being made, even where a change of plan would be cheaper and better. The intention of the framers was in a measure correct, but the law does not carry it out.

In fact, the present system of letting repairs by contract is very faulty, and continually brings the Commissioner and contractor into collision as to the construction of the contract, the one claiming that the work done is covered by the terms of the contract, the other arguing that *extra*



Section I.J.

has been expended in closing up final accounts of work completed on the enlargement of the Erie; therefore, the per centage is much greater than it would otherwise be.

ENLARGEMENT OF THE ERIE CANAL.

All the work contemplated for the enlargement in the last annual report, has been completed, and the accounts closed, excepting those for sections Nos. 60 and 62, the final accounts of which are ready for settlement.

In the month of October last the Canal Board decided to build a vertical wall 27 chains east of the waste weir near the steam mill, in the city of Utica.

This work was put under contract by the Canal Commissioners, and completed by the opening of navigation last spring, at a cost of $8,672.66. It is a very important relief to the business that is transacted at that point.

In April last, the Canal Commissioners made a contract for bottoming out the canal and raising the banks on the west end of repair section No. 3, which is also completed and settled at a cost of $6,594.28.

By act, chap. 169, Laws of 1862, the construction account of the enlargement is closed, and all the improvements hereafter made are to come under the head of repairs.

There are many improvements necessary on this division to make the canal what it should be to transact the increased amount of business.

CHAMPLAIN CANAL.

The South guard lock at Cohoes, and Parish lock (No. 17) on Wood creek, were completed and brought into use last spring.

The weigh lock and house, with the discharge culvert and channel for the same, at Waterford, were completed and brought into use about the 1st of July.

The scale of this lock has been constructed upon a plan entirely different from anything of the kind in this country. It is styled "Sampson's Patent Scales," and was built by Sampson, Tibbetts & Co. of Troy. Some little delay was occasioned in perfecting the fixtures for accurately adjusting the same, as the principle had never been applied to a scale in this form before. The adjustment was made with entire satisfaction, the scale performing its work in the most simple manner and with great accuracy. It makes no difference whether the load, when being weighed, is equally distributed on the cradle or not. The suspension of the scale is entirely within the lock, nothing being shown above the lock walls but a simple cast iron cylinder, which passes over the lock chamber through which are carried the rods, transmitting the weight of one side to the other side, thence to the scale beam in the office.

Unlike other scales, this plan dispenses with a house over the lock, and consequently diminishes the cost of the work, both of the structure and the scale, at least $5,500.

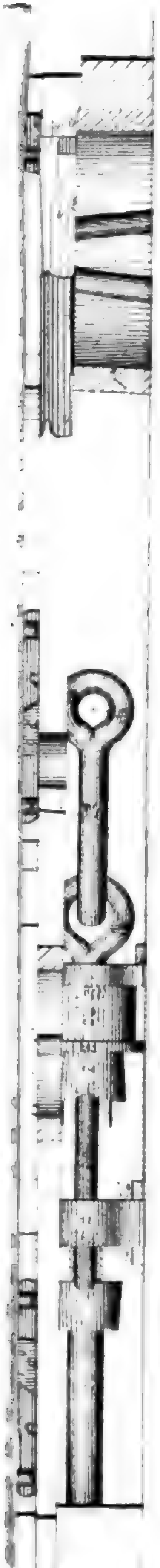
In point of economy of construction this plan far exceeds any other, and the expense of keeping in repair and adjustment must be much less.

This plan can be easily adapted to canals navigated by steam or sail vessels, as the rods which transmit the weight from one side to the other can, at a small expense, be passed under the lock through a culvert, and wells on each side with as much accuracy as when the rods pass over the lock. It can also be adapted to any class of vessels, however large, by proportioning the lock and scales to the size and tonnage desired to be weighed.

The completion of this weigh lock has been of great benefit to the navigation of the Erie canal, by relieving the West Troy weigh lock of all the boats that come from the Champlain canal, and permitting all boats that desired, to pass into the Hudson river at Waterford. From July 15th to December 7th, there has been weighed at Waterford, 3,987 boats, and at West Troy, 3,282 boats. It is very important that the berme bank of the canal, each side of this weigh lock, should be straightened, as boats cannot enter the lock without some trouble. This will be done when the contemplated improvements are made in the Waterford level.

The dam across the Mohawk river at Cohoes has been raised one and a half feet during the past summer, as contemplated, and all trouble is now obviated of boats crossing the river at low water, or of keeping up the levels on each side of the river.

Nothing has been done towards enlarging the Waterford level, as designed last year, for the want of funds. I am of the opinion that this work ought to be done as soon as possible, and the bridges raised to the height above water, required on the Erie canal, as large class boats frequently go to Waterford with freight, and are not able to return light without endangering the



bridges, and some have been knocked down in this way the past year.

The contract for driving piles on the sixteen and five mile levels has been nearly completed.

By a resolution of the Canal Board a stone dam was ordered built across Wood creek, at Parish lock, and the work has been nearly completed by the contractor for said lock, under his contract.

Contracts were entered into last January for stopping leaks in the Glens Falls feeder, and embraces that portion which passes over the limestone ledges at Glens Falls. Serious trouble has occurred here on account of the loss of water through the crevices of the rocks, and large sums of money have been expended to obviate the difficulty, but to no purpose.

By a resolution of the Canal Board a plan was adopted, as recommended by Wm. B. Taylor, Esq., then Division Engineer, to excavate the bottom below and fill up with concrete and rubble masonry; also to excavate and to build a vertical wall, laid in cement, on both sides.

Some thirty-two chains of this work was done last spring, and brought into use. The result has been such as to warrant complete success when the whole is finished.

This work extends one mile and a quarter.

The feeder at this point is made 35 feet wide on bottom, and 5 feet depth, as required by act, chap. 213, Laws of 1860.

I would recommend that a part of this work at Glens Falls be made 48 feet wide on the bottom, in order to accommodate the increasing business at that place, and that the same be extended 25 chains above the bridge at Glens Falls to a point known as "Log roll way."

The locks at Fort Miller, Moseskill and Fort Edward are in a very dilapidated condition, and require rebuilding the coming year. A law passed the Legislature the last session appropriating $50,000 for this work, but failed to receive the signature of the Governor.

Surveys, maps, plans and estimates have been perfected for all this work, and adopted by the Canal Board at a cost of $89,800. The first named lock is located on the old site and will have to be built during the suspension of navigation, but the materials should be all procured during the season previous, so as to admit of no delay.

nection with other duties, make notes from day to day of all the facts which may occur, and to render monthly reports of the same to the State Engineer and Canal Commissioner, by printed forms for that purpose.

For the accommodation of this person, a good dwelling house should be built, with a rain gauge attached, so that an accurate fall of rain and snow from year to year shall be obtained. The Canal Commissioner, at my request, has had gauges put into the wells and bulkheads of each reservoir, so that the height of water in each can be accurately taken at every visit of the person in charge.

He should also report the days he commences drawing from each reservoir, and the number of valves opened; also, from time to time, the changes in opening or closing the same.

In this way the accurate amount of water in each reservoir, as well as the calculations of the supply constantly on hand, may be made known to the State officers in charge.

A valuable fund of information by this means will be obtained for scientific purposes and for future reference, without any material extra expense.

I would recommend the immediate adoption of this plan, and the erection of a house for this purpose, at a cost not to exceed five hundred dollars.

Repairs of Erie Canal.

The present system of repairs by contract, in a great measure prevents much of this work being done, as the price paid is a gross sum per year for the amount of work performed, which induces the contractor to omit everything of the kind that can be avoided.

By changing the plan of letting repair contracts, and itemizing the work under specific prices, from measurements actually made by a competent individual, this work would all be put in good order and at a reasonable expense. And here permit me to say that with all the vigilance that may be exercised by the officers in charge of the canals, it is in my opinion almost impossible to keep them in the order required, under the present system of repairs by contract for a gross sum per year for each repair section.

On the level between locks No. 1 and 2, the sides require a

vertical or slope wall, and the bottom thoroughly cleaned to accommodate the increasing business.

A report has lately been made to yourself and the Canal Commissioner, constituting a committee of the Canal Board, in relation to the "big basin" and the above mentioned level, to which you are respectfully referred.

The canal at West Troy, in the vicinity of the side-cut, requires widening and a vertical wall on the towing-path side, to give more capacity to the canal, to accommodate the boats that accumulate at the weigh lock and pass out into the river at the side-cut.

The change bridge at the upper Mohawk aqueduct is very badly located at the foot of lock No. 22; the horses towing up boats having to pass by the lock in order to enter it, then return and pass over the bridge to a point above where they can fasten to the boat; this causes great inconvenience and delay.

I would recommend that this bridge be removed to a point 500 feet below lock No. 21, and below entrance of feeder. This will involve the expense of constructing a towing-path bank or bridge across the basin between the two locks, but the necessities of the case seem to demand it.

The stone dam across Schoharie creek is nearly completed and will be a very valuable improvement to the canal.

The head of the guard lock should be raised at least two feet to prevent high water running into the feeder. Protection walls are also required to connect with the wall from dam below and bank above, to make it all secure. In place of the old gates a bulkhead should be put in with a larger number of valves with increased area; in order to do this it will be necessary to put in a temporary coffer dam.

A rack should be inserted above the bulkhead to keep the flood wood from the valves. In order to shut off the water at any time, checks should be cut in the walls, to allow the insertion of timbers.

The completion of the Schoharie creek dam, which gives the canal the full benefit of this creek as a feeder, completes the chain of feeders east of Utica, and insures the required amount of water on this part of the canal. For the Rome level, an increased supply is actually necessary, and the probability is that the Fish creek feeder will have to be built. I am of opinion that with proper care more water can be brought from Black river, if the Black River feeder was thoroughly bottomed out at the several points where the original supply of 16,000 cubic feet per minute is to be obtained.

Respectfully submitted,
DANIEL C. JENNE,
Engineer Eastern Division.

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TABLE No. 1,

Showing the number and compensation of engineers employed upon the Eastern Division of the New York State canals, together with incidental expenses from October 1st, 1861, to October 1st, 1862.

ENLARGEMENT OF THE ERIE CANAL.

Name.	Rank.	Number of days.	Rate of compensation.	Amounts.
W. B. Taylor	Division engineer	------	$2,000 00	$180 00
do	(Travel)	------	--------	54 48
D. C. Jenne	Division engineer	------	2,000 00	515 87
do	(Travel)	------	--------	238 26
W. B. Cooper	Resident engineer	------	1,700 00	519 46
do	(Travel)	------	--------	534 30
A. C. Vedder	Second assistant engineer	74	2 75	203 50
A. V. Hartwell	do do	79	2 75	217 25
do	do do	208	3 00	624 00
G. M. Barnes	do do	59	2 75	162 25
R. J. Cantwell	do do	79	2 75	217 25
do	do do	103	3 00	309 00
Egbert Bagg	do do	74	2 75	203 50
Geo. Cushing, Jr.	do do	79	2 75	217 25
do	do do	156	3 00	468 00
D. Judson Jenne	Leveler	26	2 00	52 00
E. W. Murphy	do	33	2 00	66 00
John A. Cooper	Assistant engineer and draughtsman	287	3 50	1,004 50

TABLE No. 1.—Continued.

Name.	Rank.	Number of days.	Rate of Compensation.	Amounts.
David Vaughan	Draughtsman in State Engineer's office	*170	3 00	$510 00
Wm. Griffith	Rodman	287	1 50	430 50
W. H. Newkirk	do	103	1 50	154 50
H. P. Tiffany	do	4	1 50	6 00
E. C. Phillips	Tapeman	6	1 25	7 50
R. N. Vedder	do	13	1 25	16 25
W. D. Dunning	Clerk in division engineer's office	134	3 00	402 00
Jas. G. French	do resident do	134	3 00	402 00
	Incidental expenses.			
Stationery				192 71
Fuel				31 28
Light				13 95
Office rent				185 91
Postage, telegraph and express				92 62
Miscellaneous				97 31
Total for Eastern Division Erie canal				$8,332 40

* Includes 50 days services omitted in preceding year.

CHAMPLAIN CANAL.

W. B. Taylor	Division engineer		2,000 00	186 67
do	(Travel)			37 02
Daniel C. Jenne	Division engineer		2,000 00	563 52
do	(Travel)			188 94
W. B. Cooper	Resident engineer		1,700 00	519 45
do	(Travel)			226 98
E. H. Crocker	1st assistant engineer	*153	4 00	612 00
do	2d do	186	3 00	558 00
G. M. Barnes	2d do	20	2 75	55 00
do	2d do	208	3 00	624 00
George Cushing, Jr.	2d do	52	3 00	156 00
E. W. Murphy	Rodman	79	1 50	118 50
do	Leveler	175	2 00	350 00
D. Judson Jenne	do	113	2 00	226 00
H. P. Tiffany	Rodman	127	1 50	190 50
Wm. Hand	do	3	1 50	4 50
Wm. D. Dunning	Clerk in division engineer's office	77	3 00	231 00
James G. French	Clerk in resident engineer's office	77	3 00	231 00
Robert Johnson	Inspector	204	2 50	510 00
James Ray	do	65	2 50	162 50
De Witt Holman	do	24	2 50	60 00

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* Includes 62 days services omitted in preceding year.

TABLE No. 1.--Continued.

Name.	Rank.	Number of days.	Rate of compensation.	Amounts.
	Incidental expense.s			
Stationery				$41 33
Fuel				10 08
Light				1 42
Office rent				55 00
Postage, telegraph and express				54 93
Miscellaneous				2 00
Total for Champlain canal				$5,976 34
	BLACK RIVER CANAL.			
William B. Taylor	Division engineer		$2,000 00	$133 33
do	(Travel)			34 14
Daniel C. Jenne	Division engineer		2,000 00	167 60
do	(Travel)			59 88
William B. Cooper	Resident engineer		1,700 00	519 42
do	(Travel)		1 00	10 56
E. W. Butler	First assistant engineer	101	4 00	404 00
do	do do	186	3 50	651 00
Oscar L. Wetmore	do do	287	3 50	1,004 50
William D. Dunning	Clerk in division engineer's office	76	3 00	228 00
James G. French	Clerk in resident engineer's office	76	3 00	228 00
Samuel Alexander	Inspector	18	2 50	45 00

Incidental expenses.

Stationery			$29 40
Fuel			10 00
Light			1 40
Office rent			68 75
Postage, telegraph and express			27 80
Miscellaneous			3 20
Total for Black River canal			$3,625 98

TABLE No. 1.—Continued.

Statement showing number and compensation of engineers employed in closing final accounts, repairs, &c., for the month of September, 1862.

NAME.	Occupation.	Number of days.	Rate of compensation.	Amounts.
Daniel C. Jenne	Engineer	1 month	$2,000 00	$166 67
do	(Travel)			33 33
W. B. Cooper	Assistant engineer	1 month	1,700 00	141 67
do	(Travel)			28 56
John A. Cooper	Repairs and final accounts	26	3 50	91 00
George Cushing, Jr	Final accounts	26	3 00	78 00
A. V. Hartwell	Rebuilding Schoharie creek dam	26	3 00	78 00
W. D. Dunning	Monthly estimates and final accounts	26	3 00	78 00
E. H. Crocker	Final accounts, Champlain	26	3 00	78 00
G. M. Barnes	Construction work, do	26	3 00	78 00
E. W. Butler	Construction work, Black river	26	3 50	91 00
O. L. Wetmore	Construction work, do	26	3 50	91 00
D. Judson Jenne	Rebuilding Schoharie creek dam	26	2 00	52 00
E. W. Murphy	Final accounts, Erie	26	2 00	52 00
H. P. Tiffany	Construction work, Champlain	26	1 50	39 00
John L. Brinkerhoff	Survey of Delta feeder	6	1 50	9 00
R. N. Jenne	do do	5	1 50	7 50
Bernard Hunt	Sounding basin at Albany	3	1 50	4 50
J. G. French	Closing office at Utica	10	3 00	30 00
William Griffith	do do	10	1 50	15 00

Stationery	0 54
Lights	1 20
Office rent	23 85
Postage and telegraph	4 25
Miscellaneous	15 02
Total	$1,287 09

Distribution.

Enlargement of the Erie canal	$118 00
Champlain canal	173 50
Black River canal	216 71
Repairs of the Erie canal	544 96
do Champlain canal	167 01
do Black River canal	66 91
Total	$1,287 09

TABLE No. 1.—Continued.

Statement showing number and compensation of engineers employed in closing final accounts, repairs, &c., for the month of September, 1862.

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do	(Travel)			33 33
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do	(Travel)			28 56
John A. Cooper	Repairs and final accounts	26	3 50	91 00
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G. M. Barnes	Construction work, do	26	3 00	78 00
E. W. Butler	Construction work, Black river	26	3 50	91 00
O. L. Wetmore	Construction work, do	26	3 50	91 00
D. Judson Jenne	Rebuilding Schoharie creek dam	26	2 00	52 00
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H. P. Tiffany	Construction work, Champlain	26	1 50	39 00
John L. Brinkerhoff	Survey of Delta feeder	6	1 50	9 00
R. N. Jenne	do do	5	1 50	7 50
Bernard Hunt	Sounding basin at Albany	3	1 50	4 50
J. G. French	Closing office at Utica	10	3 00	30 00
William Griffith	do do	10	1 50	15 00

Stationery	0 54
Lights	1 20
Office rent	23 85
Postage and telegraph	4 25
Miscellaneous	15 02
Total	$1,287 09
Distribution.	
Enlargement of the Erie canal	$118 00
Champlain canal	173 50
Black River canal	216 71
Repairs of the Erie canal	544 96
do Champlain canal	167 01
do Black River canal	66 91
Total	$1,287 09

SUMMARY OF TABLE No. 1,

Showing engineering expenses for fiscal year.

NAME OF CANAL.	Engineering proper.	Incidental expenses.	Amounts.	Totals.
Enlargement of the Erie to September 1st	$7,718 62	$613 78	$8,332 40	$8 450 00
do for September	118 00		118 00	
Champlain to September 1st	5,811 58	164 76	5,976 34	6,149 84
do for September	171 00	2 50	173 50	
Black River to September 1st	3,485 43	140 55	3,625 98	3,842 69
do for September	204 50	12 21	216 71	
Repairs of Erie for September	514 31	30 65	544 96	778 88
Repairs of Champlain for September	163 01	4 00	167 01	
Repairs of Black River for September	66 91		66 91	
Total				$19,221 81

MIDDLE DIVISION.

Engineer's Office,
Syracuse, *October* 1, 1862.

Hon. Wm. B. Taylor, *State Engineer and Surveyor:*

In obedience to your instructions, I present herewith statements and estimates showing the condition of the work on the several canals embraced in the Middle Division, together with the improvements and repairs required for the same.

The canals and river navigation embraced in this division are as follows:

		Miles.
Erie canal, from the east side of the Oneida Lake canal to the east line of Wayne county		68.58
Navigable feeders:		
Limestone feeder	0.80	
Butternut do	1.55	
Camillus do	1.00	
		3.35
Oneida Lake canal		6.00
Oswego canal		38.00
Oneida River improvement		20.00
Seneca River towing path		5.00
Baldwinsville canal		1.00
Cayuga and Seneca canal		22.77
Crooked Lake canal		8.00
Chemung canal and feeder		39.00
Cayuga inlet		2.00
Chenango canal		97.00
Total Middle Division		310.70

There are also embraced in the Middle Division, for the supply of water to the canals, the following works, viz:

For the Erie canal: Erieville, Cazenovia lake, De Ruyter and the Skaneateles lake reservoirs, the Oneida, Cowassalon, Chittenango, Carpenter brook, Jordan, and Weedsport feeders, all of which are completed and in use, except the De Ruyter reservoir.

For the Chenango canal: Madison brook, Woodman's pond, Leland's pond, Bradley brook, Hatch's lake, and Eaton brook reservoirs and their feeders.

The Division, up to the 15th day of July was subdivided as follows:

Residency designated as No. 1.—Embracing the Chenango, Cayuga and Seneca, Crooked lake, and Chemung canals, together with the side-cuts, feeders, reservoirs, &c., connected therewith, in charge of W. H. H. Gere, Resident Engineer.

Residency designated as No. 2.—Embracing the Erie canal, from the east bank of the Oneida Lake canal, to the east line of Wayne county, the Oswego and Oneida Lake canals, together with the side-cuts, feeders, reservoirs, &c., connected therewith, in charge of M. S. Kimball, Resident Engineer.

From the 15th to the 22d day of July, the two residencies were merged into one, and placed in charge of Ogden Edwards, Resident Engineer.

A resolution of the Canal Board, taking effect July 22d, restored the residencies as they existed previous to July 15th, placing Ogden Edwards in charge of residency No. 1, and re-installing M. S. Kimball in charge of residency No. 2, until the 1st day of September, when the act of the Legislature abolishing the office of resident engineer became operative.

Table No. 1 gives the names, rank, period of service, and compensation, of all the employees in the Department.

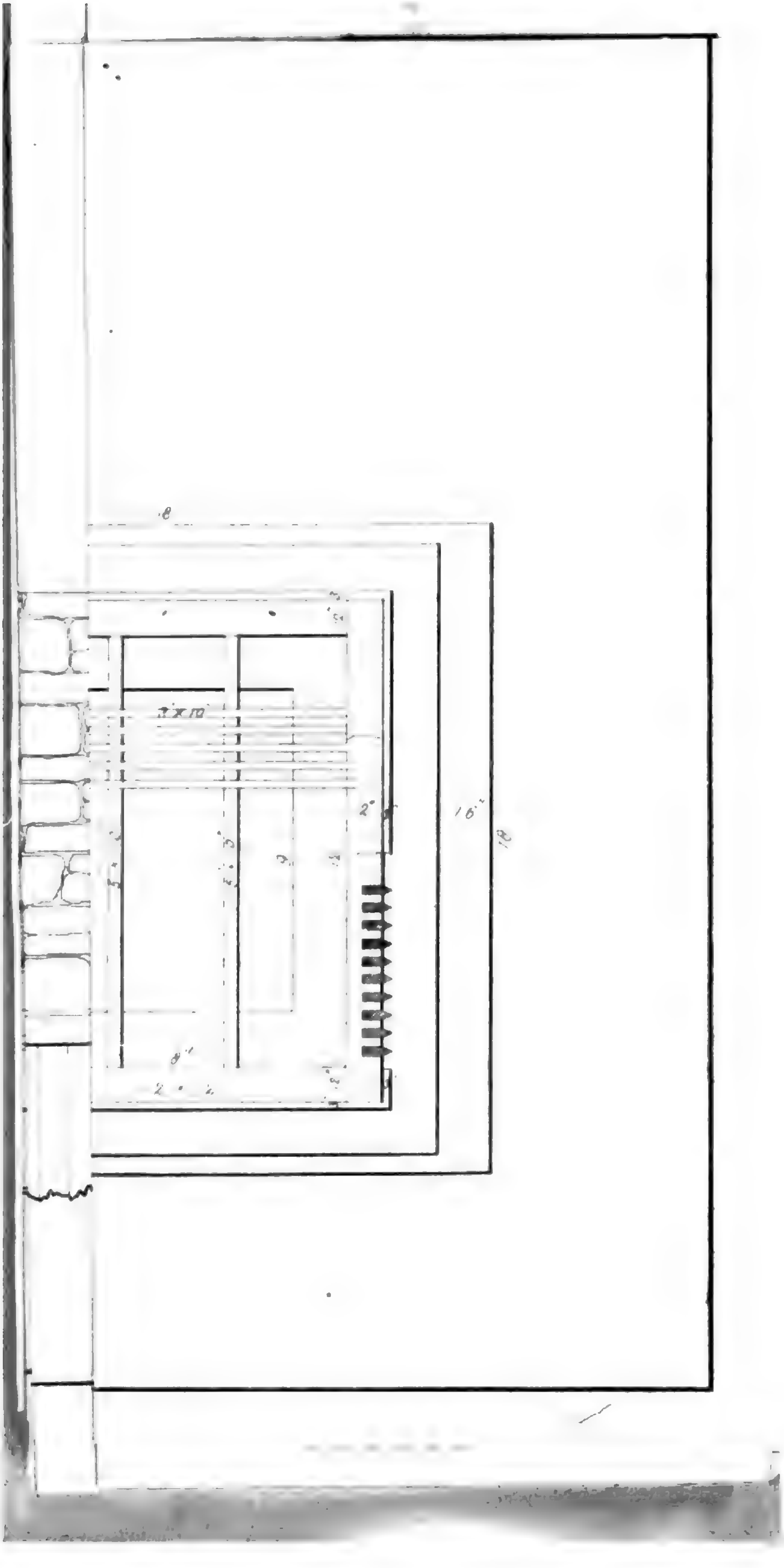
The annexed abstract No. 1 gives the amount expended by each resident engineer upon each residency, and Summary No. 1 the total expenditures on account of engineering.

The expenses of the Department for the year ending October 1, 1862, has been $24,975.77, which is $7\frac{7}{10}$ per cent. on the amount of work done.

The final accounts for all existing contracts on account of the enlargement of the Erie, Oswego, and Cayuga and Seneca canals have been closed.

Enlargement of the Erie Canal.

This division of the main canal, with all its feeders and structures, is completed, with the exception of the De Ruyter reservoir. This important work was left on the first day of Septem-


e
2"×10"
2"
16"
18"
8"
2"

ber in an unfinished state. I would recommend that funds for its completion be provided by further legislation. It is estimated to cost $32,110 to finish the reservoir and all the structures connected therewith. In regard to the details connected with this work, and the additional structures which have been erected, or partially erected, to render the work complete in all its parts, I refer you to my report made and submitted.

The bridges have all been raised to a height nineteen feet above canal bottom, leaving a clear passage-way of twelve feet above surface water line.

The full capacity of the Lodi locks (No. 47) is frequently unattainable during the dry season of the year, for the want of a greater supply of water. This may be in a measure relieved by waters contemplated to be drawn from the De Ruyter reservoir, and, in my opinion, the relief from this source will be inadequate. I would recommend that the bottom of the prism of the canal, from the breast wall of the lock to the Chittenango feeder (a distance of fourteen miles), be excavated to a depth of fifteen inches below present bottom at the breast wall, and terminating at 0 in depth at the mouth of the feeder, making an inclined plane which will carry a much larger portion of the waters of the feeder to the lock, and give a permanent relief to existing difficulties. This declivity would of course create some current, not probably to exceed one-third of a mile per hour, which would not materially affect navigation. The channel excavated need be but twenty feet in width, until within five hundred feet of the lock, with side slopes of 3 to 1, which will prevent any interference with the stability of the slope walls. It is possible that this channel might come in contact with the extrados of the arches of the Central railroad tunnel. This fact I am unable to determine with accuracy until the close of navigation.

The weigh lock at Syracuse is unfortunately located. Its confined and cramped position, especially at its entrance from the west, together with its proximity with the mouth of the Oswego canal, renders it incapable of one-half its usefulness during any season of an unusual crowd of business, or by any failure in the Utica or Rochester weigh locks, when more than an ordinary share of work is forced upon it.

The basin, at its western end, is only capable of receiving one boat at a time, which has to be hauled directly into it at right angles to the canal, and then moved on a line parallel with the canal into the lock. It can be greatly relieved by extending the basin westerly to such distance as shall give it a capacity for two boats, which will allow a boat coming from the west to pass directly into the lock without checking its headway, and one from the east to pass directly out into the main canal.

I would recommend that a new cradle, constructed of iron, be substituted for the one now in use. The present one is but seventy-five feet in length, and the utmost caution is necessary, in weighing boats of the largest class, to locate them in such way as to have each end project equally beyond the ends of the cradle. Boats of the largest class are ninety-eight feet in length, and there must be a projection at each end of eleven and one-half feet, which has no support. The new one should be ninety feet in length. A great saving in time can be made if an iron one is used. It takes four minutes ordinarily to empty the lock, two minutes of which are taken to discharge the water from the top of the cradle until it is clear of the water. An iron one would probably occupy but six inches; the present one is twelve inches in depth.

Supply of Water for the Jordan Level.

The Jordan level is a summit level west of Syracuse. It is fed by the Skaneateles lake at Jordan, and the Camillus, near Syracuse, a very unimportant stream in dry weather. The Jordan lock has a small lift when compared with the lock at Port Byron, farther west. Owing to this fact, there is a constant draught of water kept up between Jordan and Port Byron to furnish the supply. In any dry season the State runs the hazard of coming short of water from the Skaneateles, the only reliable source. It has been in contemplation for many years past to appropriate the Owasco creek, and take it in at Port Byron.

The property at Port Byron known as the Beach property, embracing a race two miles in length, has been burned out, and the water is now offered to the State, it is said, for less than one-eighth the price originally asked. It is therefore recommended that the State at once purchase this right and take the water into the canal, and relieve the difficulty.

The cost of taking in the water through iron pipes will not exceed $15,000.

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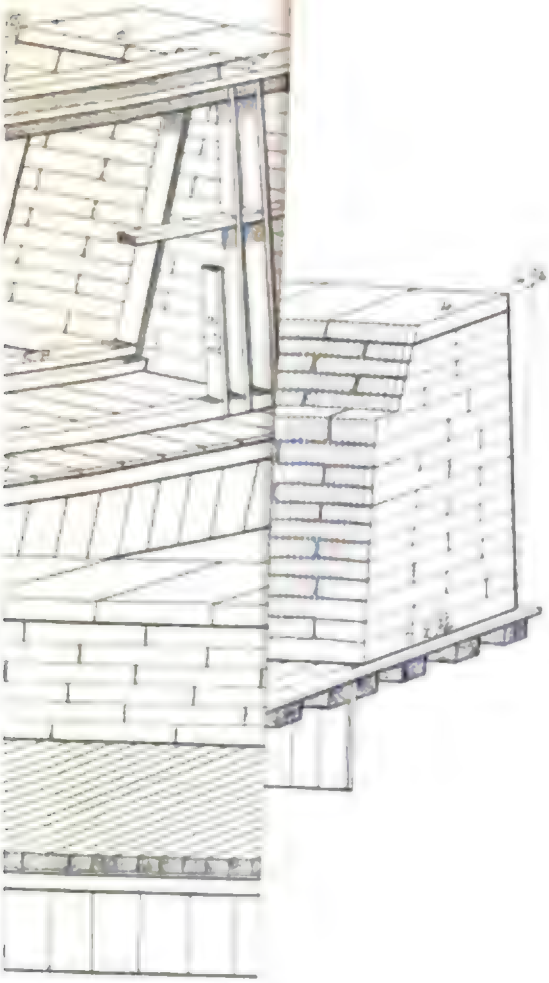

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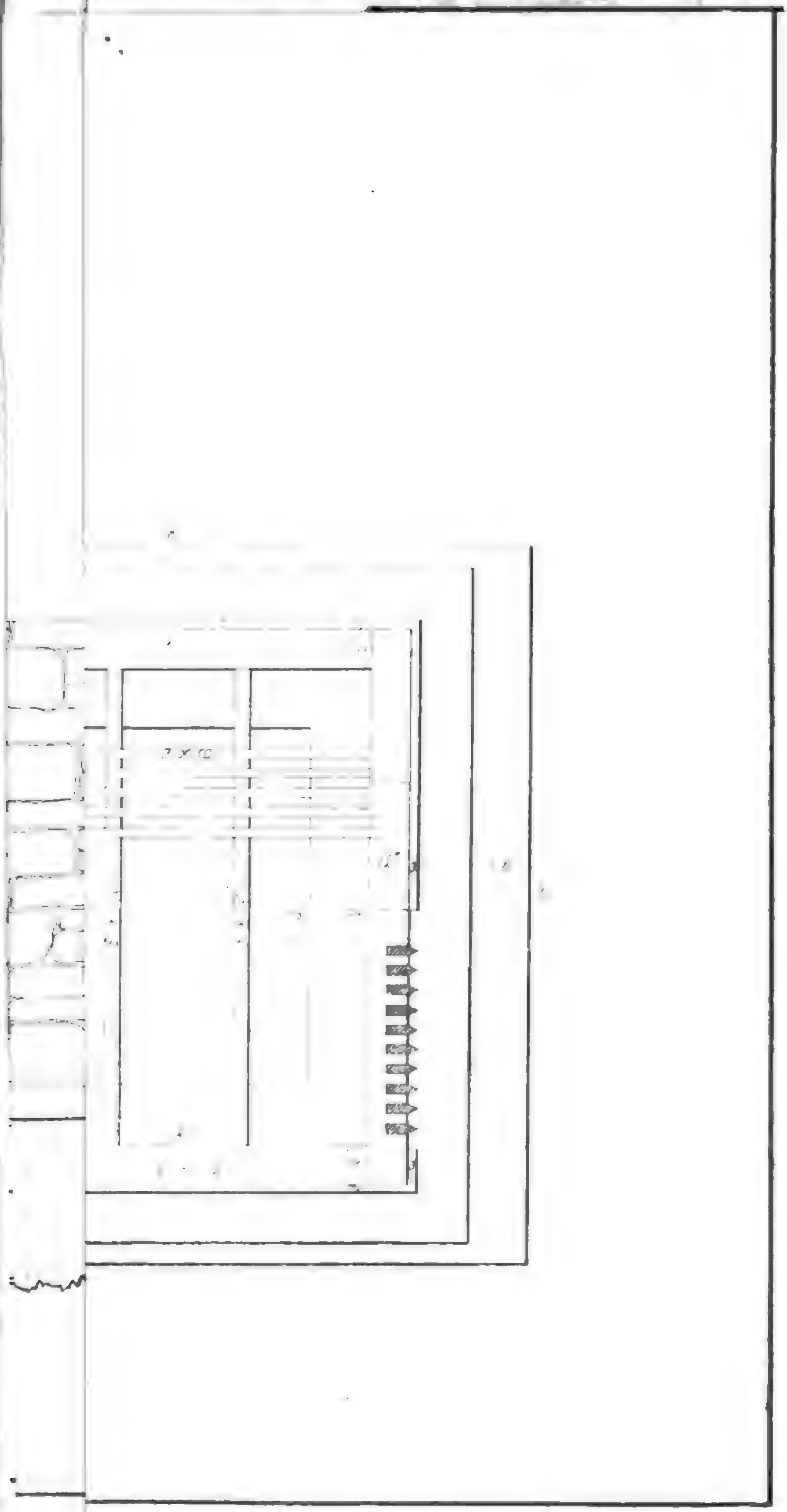

ENLARGEMENT OF THE CAYUGA AND SENECA CANAL.

This canal, which connects the Cayuga and Seneca lakes with the Erie canal, at Montezuma, is now completed. The waste wall at Seneca Falls, located on the canal, between locks No. 7 and 8, and which was intended to discharge the surplus water of the canal (which is the river channel) into the mill stream channel, has been found inadequate.

The insufficiency arises from the location of the wall with reference to the current of the channel, it being precisely parallel with it. It is of vital importance to the safety of the canal, that the surplus waters which are forced into the channel during freshets, be provided with an adequate escape. There are two ways to remedy the evil: one is by building a dam or waste wall adjacent to lock No. 7, with a spillway of one hundred feet in length, which can be located at right angles to the current; or, by placing a series of waste gates near to the lock, which shall draw from canal bottom, and the water carried by a channel (protected on sides with permanent walls) parallel with the lock chamber, and discharged into the level below.

The channel at the outlet of Seneca lake, at its "north-east corner," is being dredged, under special law (act, chap. 479, Laws of 1857). The width and depth of the channel is to correspond with that of the canal. The work is not yet completed.

I apprehend that this channel, when completed, will create so much current in the channel of the main canal as to seriously retard navigation.

A new bridge is being rebuilt on Evans-street, Geneva, under special law.

Whole amount of work done the past year, $41,496.60.

ENLARGEMENT OF THE OSWEGO CANAL.

All the contracts on this canal, except two, were completed on the 1st of September, as required by act, chap. 169, Laws of 1862.

One of these, the contract for dredging the river level above Fulton, known as the contract for "Sections 24, 25, 26, and part of 27," has about one thousand yards of hard, indurated material, mixed with stone of all sizes, embracing scattering boulders, to be picked up. The reason this contract was not done on the 1st of September, was on account of the high water of last spring preventing the contractor from commencing early enough to ensure it.

The other work not completed is the contract for "Sections 22 and 23," a mile canal level below the "Horse-shoe dam." There are two causes for the non-completion of this. One, on account of the high water; and the other, the unexpected continued hardness of the bottom excavation. The contractor (sub-contractor), Thomas Gale, is still pushing on, and promises to complete it before leaving it, and trust to some future legislative action to remunerate him. This, if not fortunate to the State, will be for the boating and forwarding interest, giving the long looked for clear channel.

The cuts on some of the river levels are more or less liable to, and do become partially filled up from high water and ice dams that form and change the channels of the river for the time being. But little has been known of it, however, as, while the work has been in the hands of the construction contractors, the bars have been removed and paid for under their respective contracts—channels dug, or rather partly dug, on "Little Gascon," near Fulton, before the suspension of the first contract, were found entirely filled up, and have been re-excavated under the new.

How much trouble of this kind will be found with completed channels in future, of course, time alone can determine.

REPAIRS OF THE OSWEGO CANAL.

Mud lock, as indicated in the last report, was taken up, the bottom piled, and the whole rebuilt and got ready, and boats passed in the afternoon of the first day of opening. This was accomplished as against a bad season, and an unprecedented high stage of water, the water being, at the highest, twenty feet above the bottom of the pit. For a time most of the stone, spread over several acres, were submerged to the depth of three feet. Coffer dams were put around the whole, and the water bailed out.

A waste weir, a short distance above the lock, has been put in the past summer, which will control the Liverpool level, and subserve the necessity of emptying through the lock as heretofore in cases of a break. It was the emptying the level through this lock that doubtless caused the failure of it last year.

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CANA

WM. B. TAYLOR, S

LIV. ENGINEER.

KIALL,

gineer.

Attention is earnestly called to the condition of the old wooden dams on the river, of which something was said last year. They have been built now thirty-five years, and have, doubtless, fulfilled all that could have been expected of wooden dams, without having, at any time, been thoroughly overhauled and rebuilt. They are constantly settling, and require still higher and higher flush boards through the low water to maintain navigation. The ridge poles are literally bored to pieces, where not decayed. The interior is no longer capable of holding securely new work when added. Nothing but sleepless vigilance saved some of them during the high water of last spring. A concurrent resolution of last winter requires the Canal Board to lower the Phœnix dam to such a point as to maintain seven feet of water in the canal, and no more. It is respectfully suggested, whether it may not be now regarded as the true policy of the State, and while the matter is in hand, to rebuild it of stone, as an eventual saving of cost.

The same argument used last year to show the necessity and convenience of a weigh lock at Oswego, would be applicable now, only it would apply with much greater force. With the constantly increasing business of the canals, the delay at the Syracuse weigh lock becomes more and more serious. Send all boats ahead, and the difference of tolls at once answers the question of money to rebuild with.

REPAIRS OF THE CHENANGO CANAL.

I have made a personal and thorough examination of all the locks upon this canal, and find that those from the summit north, which were built of the lime and sandstone of that vicinity, have retained their original proportions entire, with the exception of a few of the lower wings, which have been more or less crowded over into the canal by the constant pressure of the bank and the effect of frost, and many of them should be taken down to the top water line of the lower level and relaid.

They were originally carried up vertically, but should, when rebuilt, be laid with a batter.

Those from the summit south, which were constructed of the thin and shaly stone belonging to the formation of that section, have more or less failed.

It will be necessary to partially or entirely reconstruct the most of them within a few years. I would recommend an appropriation of $25,000 per year for this purpose, until the whole ar put in good condition.

The repairs generally have been well maintained. Much difficulty was experienced during the dry portion of the season fo the want of water, especially from the summit southerly. Th only remedy I can find is, the reconstruction or repair of th Kingsley Brook reservoir. An estimate of the cost to repair wa submitted to you in August last. The cost to repair on the ol plan was $18,172.

Repairs of Chemung Canal and Feeder.

Seven locks were rebuilt upon the main canal and three upo the feeder the past season, and ten more are to be "reconstructed to such an extent as may be required" the coming winter.

I have made a personal examination of all the locks, and th following table will give you their condition:

No. of Lock.	Condition.
1	Requires rebuilding.
2	New composite.
3	To be rebuilt this winter.
4	do do do
5	Requires rebuilding.
6	Requires rebuilding—bad condition.
7	To be rebuilt this winter.
8	Will do for two or three years.
9	New composite.
10	To be rebuilt this winter.
11	Rebuilt in 1860.
12	Rebuilt last year.
13	To be rebuilt this winter.
14	Rebuilt last year.
15	In very bad condition.
16	Will answer for one or two years.
17	do do do
18	do do do
19	Rebuilt two years ago.
20	In bad condition.
21	Rebuilt three years ago.
22	To be rebuilt this winter.
23	do do do

No. of Lock.	Condition.
24	To be rebuilt this winter.
25	do do do
26	Will do for a few years.
27	Rebuilt three years ago.
28	Will do for three or four years.
29	To be rebuilt this winter.
30	In bad condition.
31	Rebuilt three years ago.
32	Will do for three or four years.
33	Will do for two or three years.
34	Rebuilt last year.
35	Rebuilt three years ago.
36	Will do for another year.
37	Rebuilt three years ago.
38	do last year.
39	do do
40	do two years ago.
41	do three do
42	do last year.
43	do two years ago.
44	do last year.
45	do two years ago.
46	do do do
47	do do do
48	do do do
49	Elmira lock into river—will do.
50	Rebuilt last year—on feeder.
51	do do do
52	do do do
53	do guard lock—on feeder.

This canal, with the exception of the new structures lately erected, is in a most dilapidated condition. I would recommend an annual appropriation of $50,000 until all the original structures are renewed or put in a working or safe condition.

By a resolution of the Canal Board, passed March 27th, 1862, boats were allowed a draught of water of four feet, instead of three and one-half feet as heretofore. This has obliged the repair contractor to do a large amount of work which otherwise would not have been required.

The banks of the feeder had to be raised for a long distance, also the bridges, and in many places the width of the banks has been increased, and the outside slope of the bank, in many places secured by brush and stone to protect it from sliding into the adjoining creek.

REPAIRS OF THE CAYUGA AND SENECA CANAL.

Extensive repairs have been made, though not yet completed, in the long pier at Geneva, and a new light house erected upon it. The pier has been protected by piles driven on the lake side and secured to the docking.

A plan for a new towing-path bridge at Waterloo, has been made, and the structure will be ready to put up on the close of navigation.

A new towing-path bridge over the Seneca river, at the junction, has been ordered, and will be completed before the opening in the spring.

The wood work on one side of the chamber of lock No. 11 became detached from the wall and fell in, but the damage was promptly repaired. A thorough examination of this lock will be made on the close of navigation. It seems impossible that any defect exists in the bottom, as the structure is on a pile foundation.

The repairs have been generally well kept up, and the entire canal is in a first rate condition with the above exceptions.

REPAIRS OF THE CROOKED LAKE CANAL.

Extensive repairs have been required upon this canal, in consequence of the resolution of the Canal Board applied to the Chemung canal, which also applies to this.

The banks have been raised nearly the entire length. Brush and stone have been placed at the most exposed points next adjoining the outlet. Piles have been driven at the foot of the slopes for a long distance next to the outlet near Dresden. The pier at Dresden has also been protected by piles. A new bridge near Penn Yan has been erected. The towing-path from the guard lock at Penn Yan to the lake should be raised, and its face protected by a heavy rip-rap or slope wall.

REPAIRS OF THE ONEIDA LAKE CANAL.

This canal has been nearly useless the past season, from two causes: 1st. The locks are so worn out and worthless that they are nearly impassable, and the canal itself has been closed a portion of the season in consequence of the waste of water involved in keeping it supplied from the Erie Canal. 2d. The obstruction at the bar, at its outlet into the lake still remains, and loaded boats which pass over have to be lightened of nearly half their freight.

CAYUGA INLET.

The channel has been dredged from Owego street to the lake, giving a depth of seven feet of water. The high bridge is being removed, and a draw is to be substituted. The pier is also being repaired. This work is being done under special law (act, chap. 458, Laws of 1862).

J. P. GOODSELL, *Engineer.*

TABLE No. 1.

Showing the number and compensation of engineers and employees in the Engineer Department of the Middle Division of the New York State canals, together with incidental expenses, for the fiscal year ending Sept. 30, 1862.

ENLARGEMENT OF THE ERIE CANAL.

Names.	Rank.	No. of days employed.	Rate of compensation.	Amount.
Henry Van Vleck	Division engineer		$2,000 00	$258 00
do	(Travel)			67 76
J. P. Goodsell	Division engineer		2,000 00	230 11
do	(Travel)			70 62
M. S. Kimball	Resident engineer		1,700 00	767 98
do	(Travel)			263 88
Ogden Edwards	Resident engineer		1,700 00	37 26
do	(Travel)			6 96
W. W. Jerome	1st assistant engineer	287	4 00	1,148 00
Julius C. Laass	2d do do	263	3 25	854 75
Charles A. Beach	2d do do	287	3 25	932 75
Charles Truesdell	2d do do	287	2 75	789 25
C. W. Downes	Leveler	287	2 25	645 75
Henry F. Greene	Draughtsman	4	2 50	10 00
N. M. Gregg	Rodman	215	1 75	376 25
H. J. Frazee	do	19	1 75	33 25
	do	33	1 75	57 75
	Leveler	53	2 00	106 00

D. H. Bruce	Clerk division and resident engineers	69	3 00	207 00
J. C. Burnham	do do do	73	3 00	219 00
Moses Poppleton	Inspector	49	2 00	98 00

Incidental expenses.

Labor	312 00
Stationery	115 29
Fuel	35 47
Light	11 48
Office rent	63 00
Postage, telegraph and express	46 16
Miscellaneous	105 47
Total	$7,869 19

ENLARGEMENT OF THE OSWEGO CANAL.

Henry Van Vleck	Division engineer		$2,000 00	$418 65
do	(Travel)			101 38
M. S. Kimball	Assistant engineer		1,700 00	767 98
do	(Travel)			499 56
Bruce Kimball	2d assistant engineer	287	2 50	717 50
J. E. Forman	Rodman	287	2 00	574 00
Patrick Murphy	Tapeman	287	1 25	358 75
A. C. Scott	Surveyor and draughtsman	287	3 00	861 00
David Vaughn	Draughtsman in State Engineer's office	79	3 00	237 00
Findley Hays	Inspector	153	1 75	267 75
C. H. Lusk	Clerk	287	2 25	645 75

TABLE No. 1.—Continued.

Names.	Rank.	No. of days employed.	Rate of compensation.	Amount.
Incidental expenses.				
Office rent				$91 66
Stationery				60 53
Postage, telegraph and express				42 33
Fuel				48 36
Light				21 24
Labor				23 00
Affidavits				9 70
Night watching				104 25
Miscellaneous				13 47
Total				$5,863 86
ENLARGEMENT OF THE CAYUGA AND SENECA CANAL.				
Henry Van Vleck	Division engineer		$2,000 00	$222 25
do	(Travel)			54 48
W. H. H. Gere	Resident engineer		1,700 00	541 86
do	(Travel)			218 16
Ogden Edwards	Resident engineer		1,700 00	83 85
do	(Travel)			40 26
Julius C. Laass	2d assistant engineer	14	3 25	45 50

W. V. Van Rensselaer	2d assistant engineer	287	2 75	789 25
Eugene B. Murdock	2d do do	43	2 75	118 25
M. Van Brocklin	2d do do	240	2 75	660 00
Henry F. Greene	Draughtsman	17	2 50	42 50
James Burke	do	59	2 50	148 00
James Burke	do	15	3 00	45 00
John F. Herrick	Rodman	156	1 50	234 00
John F. Herrick	do	131	1 63	213 53
D. D. Hillis	do	287	1 50	430 50
A. K. Hills	Axeman	202	1 25	252 50
D. H. Bruce	Clerk division and resident engineers	28	3 00	84 00
George B. Edwards	Clerk	10	2 50	25 00
J. C. Burnham	Clerk	19	3 00	57 00
	Incidental expenses.			
Labor				41 75
Stationery				62 06
Fuel				43 10
Light				19 97
Office rent				39 59
Postage, telegraph and express				37 66
Miscellaneous				15 85
Total				$3,565 87

TABLE No. 1.—Continued.

CROOKED LAKE CANAL.

Names.	Rank.	No. of days employed.	Rate of compensation.	Amount.
W. H. H. Gere	Resident engineer		$1,700 00	$102 39
do	(Travel)			14 04
D. E. Whitford	2d assistant engineer	5	2 75	13 75
O. M. Clauharty	Rodman	5	1 50	7 50
Total				$137 68

CHENANGO CANAL.

Names.	Rank.	No. of days employed.	Rate of compensation.	Amount.
Henry Van Vleck	Division engineer		$2,000 00	$203 32
do	(Travel)			74 76
J. P. Goodsell	Division engineer		2,000 00	21 92
do	(Travel)			10 02
W. H. H. Gere	Resident engineer		1,700 00	233 28
do	(Travel)			80 40
Ogden Edwards	Resident engineer		1,700 00	69 86
do	(Travel)			32 46
O. H. Bogardus	2d assistant engineer	131	3 25	425 75
O. H. Bogardus	2d do do	103	2 75	283 25
James Burke	Draughtsman	25	2 50	62 50
James Burke	do	15	3 00	45 00

James G. Tracy	Rodman	130	1 50	195 00
D. H. Bruce	Clerk division and resident engineers	8	3 00	24 00
George B. Edwards	Clerk	18	2 50	45 00
J. C. Burnham	Clerk	14	3 00	42 00
Incidental expenses.				
Postage, telegraph and express				8 02
Miscellaneous				4 00
Total				$1,860 54

CHEMUNG CANAL.

Henry Van Vleck	Division engineer		$2,000 00	$266 33
do	(Travel)			106 74
J. P. Goodsell	Division engineer		2,000 00	10 96
do	(Travel)			11 64
W. H. H. Gere	Resident engineer		1,700 00	467 33
do	(Travel)			197 10
Ogden Edwards	Resident engineer		1,700 00	32 59
do	(Travel)			11 46
Julius C. Laass	2d assistant engineer	13	3 25	42 25
D. E. Whitford	2d do do	287	2 75	789 25
E. B. Murdock	2d do do	244	2 75	671 00
Henry F. Greene	Draughtsman	25	2 50	62 50
James Burke	do	66	2 50	165 00
James Burke	do	10	3 00	30 00
O. M. Claubarty	Rodman	282	1 50	423 00

TABLE No. 1.—Continued.

Names.	Rank.	No. of days employed.	Rate of compensation.	Amount.
B. M. Wentz	Rodman	185	$1 50	$277 50
D. H. Bruce	Clerk division and resident engineers	20	3 00	60 00
George B. Edwards	Clerk	8	2 50	20 00
J. C. Burnham	Clerk	16	3 00	48 00
	Incidental expenses.			
Labor				22 25
Stationery				50 61
Fuel				37 71
Light				9 25
Office rent				65 00
Postage, telegraph and express				8 51
Miscellaneous				8 05
Total				$3,894 03

TABLE No. 1.—Continued.

Schedule of engineering force in the Department, employed for the month of September.

Names.	Nature of duties.	No. of days employed.	Rate of compensation.	Amount.
J. P. Goodsell	Engineer		$2,000 00	$166 66
do	(Travel)			33 34
M. S. Kimball	Assistant engineer		1,700 00	141 66
do	(Travel)			33 34
Ogden Edwards	Assistant on repairs	26	4 00	104 00
W. W. Jerome	Closing final accounts	26	4 00	104 00
Charles Truesdell	do do	26	3 50	91 00
O. H. Bogardus	do do	26	3 50	91 00
D. H. Bruce	do do	26	3 00	78 00
J. C. Laass	do do	26	3 00	78 00
C. A. Beach	do do	26	3 00	78 00
E. B. Murdock	do do	26	3 00	78 00
A. C. Scott	do do	26	3 00	78 00
D. E. Whitford	do do	26	3 00	78 00
James Burke	do do	26	3 00	78 00
Howard Soule, Jr.	do do	17	3 00	51 00
C. A. Sweet	do do	26	2 50	65 00
C. W. Downes	do do	26	2 50	65 00
Bruce Kimball	do do	26	2 50	65 00
John O'Hara	Inspector building bridge abutments	26	2 50	65 00
C. H. Lusk	Closing final accounts	26	2 25	58 60

TABLE No. 1.—Continued.

Names.	Nature of duties.	No. of days employed.	Rate of compensation.	Amount.
J. F. Herrick	Closing final accounts	26	2 00	52 00
George B. Edwards	do do	26	2 00	52 00
Total				$1,784 60

Which amount is distributed as follows:

Chenango	$181 00	
Chemung	246 00	
Cayuga and Seneca	272 00	
Oswego	301 60	
Erie	784 00	
		$1,784 60

TABLE No. 1.—Continued.

Abstract of expenditures by Resident Engineers.

ITEMS.	Enlargement of the Erie canal.		Enlargement of the Oswego canal.		Enlarge't of Cayuga and Seneca canal.		Chemung canal.		Chenango canal.		Crooked Lake canal.	Total.
	Kimball.	Edwards	Kimball.	Edwards	Gere.	Edwards	Gere.	Edwards	Gere.	Edwards	Gere.	
Engineering, proper	$6,364 61	$189 22	$4,863 29	$66 00	$2,489 85	$539 31	$2,922 73	$374 25	$1,216 18	$322 32	$137 68	$19,485 44
Labor	312 00	....	127 25	....	30 25	11 50	22 25	....	....	....	....	503 25
Stationery	82 35	32 94	60 53	....	57 02	5 04	46 13	4 48	....	....	....	288 49
Fuel	35 47	....	48 36	....	43 10	....	37 71	....	....	....	....	164 64
Light	11 48	....	21 24	....	19 44	53	9 25	....	....	....	....	61 94
Office rent	63 00	....	91 66	....	33 21	6 38	57 50	7 50	....	....	....	259 25
Postage, telegraph and express	38 44	7 72	42 33	....	33 19	4 47	5 20	3 31	5 63	2 39	....	142 68
Miscellaneous	105 47	....	23 17	....	14 80	1 05	8 05	....	4 00	....	....	156 54
Totals	$7,012 82	$229 88	$5,277 83	$66 00	$2,720 86	$568 28	$3,108 82	$389 54	$1,225 81	$324 71	$137 68	$21,062 23

TABLE No. 1.—Continued.

Summary of engineering expenses.

Names.	Rank.	Erie canal.	Oswego canal.	Cayuga and Seneca canal.	Chemung canal.	Chenango canal.	Crooked Lake canal.	Total.
Henry Van Vleck	Division engineer	$325 76	$520 03	$276 73	$373 07	$278 08	....	$1,773 67
J. P. Goodsell	do do	300 73	....	....	22 60	31 94	....	355 27
M. S. Kimball	Resident engineer	7,012 82	5,277 83	....	....	....	....	12,290 65
W. H. H. Gere	do do	....	....	2,720 86	3,108 82	1,225 81	$137 68	7,193 17
Ogden Edwards	do do	229 88	66 00	568 28	389 54	324 71	....	1,578 41
		$7,869 19	$5,863 86	$3,565 87	$3,894 03	$1,860 54	$137 68	$23,191 17
Expenditures during the month of September, 1862		784 00	301 60	272 00	246 00	181 00	....	1,784 60
		$8,653 19	$6,165 46	$3,837 87	$4,140 03	$2,041 54	$137 68	$24,975 77

WESTERN DIVISION.

Engineer's Office,
Rochester, Sept. 30, 1862.

Hon. Wm. B. Taylor, *State Engineer and Surveyor:*

Sir,—In compliance with your instructions, I herewith submit my annual report of the Western Division of the canals of this State, for the year commencing the 1st of October, 1861, to 30th of September, 1862.

The canals embraced in this division are as follows:

Erie canal, from the east line of Wayne county to Buffalo		148½ miles.
Genesee Valley, from Rochester to Millgrove	113½ miles.	
Dansville branch of Genesee Valley canal	11 miles.	
		124½ miles.
Making a total length, exclusive of feeders, reservoirs, basins and slips, of		273 miles.

Engineer Department.

This division remained divided into two subdivisions up to the 1st of September, 1862, each of which was in charge of a resident engineer.

The eastern subdivision was in charge of Daniel Richmond, resident engineer, and extended from the east line of Wayne county to Brockport	75½ miles.
And the Genesee Valley canal	124½ miles.
Making total of	200 miles.

The western sub-division has been under the charge of Ensign Bennett, resident engineer, and extends from Brockport to Buffalo, 73 miles.

On the 1st of September, 1862, this subdivision ceased, under act, chap. 169, Laws of 1862. Since, the western division has been in charge of Orville W. Storey. The Engineer Department has been occupied on the work under contract, both of construction and of repairs, and in making surveys, and surveys of lands belonging to the canals, for record in the Canal Department, and for the Appraisers; also in measuring up work not under contract, done and to be done; to secure and protect the navigation of the canal, and in personal attention to navigation.

After the opening of navigation last spring, the number employed was lessened, and during September their services were confined principally to closing up final accounts, and on surveys and maps.

The late resident engineers have, since the first of September, examined and verified to final accounts, on their respective subdivisions.

The rank and number of persons employed in the Engineer Department, on the 31st of August, were as follows:

Division engineer	1
Resident engineers	2
First assistant engineers	2
Second assistant engineers	5
Surveyors and draughtsmen	4
Rodmen	3
Chainman	1
Axeman	1
Inspector	1
Total number	20

The number employed on the 30th of September was as follows:

Engineer	1
Assistants, including rodmen, chainmen and axemen	12
Total number	13

The expenses for the Engineer Department for the year have been as follows:

Erie canal	$19,110 02
Genesee Valley canal	4,164 03
Total	$23,274 05

The following statement shows the amount of work done, &c.:

Construction Erie canal	$174,224 49	
do Genesee Valley canal	5,890 88	
		$180,115 37
Repairs Erie canal	$59,811 49	
do Genesee Valley canal	53,328 76	
		113,140 24
Total		$293,255 61

The cost of engineering, including surveys upon the amount of work done as above stated, amounts on the Erie canal to $8\frac{1}{10}$ per cent. and on the Genesee Valley canal to 7 per cent.

ENLARGEMENT OF THE ERIE.

Estimated cost to complete work under contract, September 30th, 1861	$108,330 00
Amount due on the same for Sept. 30th, 1861, to Sept. 1st, 1862, including allowance, $29,675.93, under Laws of 1862	131,647 14
Increase	$23,317 14

Amount of work done previous to Sept. 30th, 1861	$6,618,496 39
Raising bridges	694 73
Amount done since Sept. 30th, 1861, on work then under contract	131,647 14
Amount done in raising bridges not then under contract	3,188 16
Amount done on work which has not been included as enlargement work in former reports, and which was put under contract in December and March	39,389 19
Amount of per centage retained Sept. 30th, 1861	49,471 00

The work on the enlargement of the Erie canal, and on the Genesee Valley canal, is not completed, as contemplated. Many of the accounts are closed up under chap. 169, Laws of 1862, and the remaining accounts are in a forward condition to be closed.

The cost of the work on sections Nos. 252, 257, 259, 260, 261, and 262, east of Rochester, was $4,844.37 over the amount that was estimated to cost at the last annual report.

Much of it was for strengthening the embankments which experience has proved were built too light.

The high embankment at Holley has been well protected with stone, which has made a large increase on that work.

The increase on sections Nos. 316, 320, 321, and 324, has arisen from the employment of State forces, the cost of which would, as a matter of course, exceed the low prices of the contract.

The increase on the several sections of the Mountain Ridge, and Tonawanda creek, which has lately been performed by dredging, is a small per centage on the large amount of work.

On the Erie basin and slips, the work exceeds the last annual estimate, which had been kept down to as low a figure as it was deemed safe. But the expense is still less than the work would cost on the plan originally contemplated; sections Nos. 361, 362, 363, 364, 365, and 366 were increased under acts of the Legislature.

Much exertion was used during the winter to employ a sufficient force of laborers to perform all the construction work, (which could not be done during navigation,) both on the part of the contractors and by men put on the work by the Canal Commissioner. But there was not sufficient surplus labor to be found. Much work was from this cause left undone.

Some work has been done since the opening of navigation on work, besides the Erie basin, but no monthly payments were made on work done after that time.

Under the contract for excavating the bottom of the canal, made in December, 1861, and in March last, an expense to the amount of $34,250.83 has been paid.

On several of these contracts the Commissioner put on a force of men.

Much of the time during the year, the single locks proved insufficient to pass the boats and rafts; frequently many were waiting at the locks, and at the occasional detentions so many arrived that several days would elapse before the crowd ended.

The work of pressing importance to be done on the Western Division of Erie canal is making the culverts safe between Lockport and Brockport, excavating the bottom of canal where it was left undone under act, chap. 169, Laws of 1862, excavating bottom in Clyde level, widening out and protecting with stone, the narrow weak banks, and raising the lowbanks, andthe construction of 13 locks between Rochester and Cayuga marshes, and a guard lock at Black Rock.

Work on the culverts should commence immediately on the close of navigation, and all finished before the opening of navigation next spring; excavating bottom ought also to commence on the close of navigation and the contractors to put their repair contracts in proper repair. Materials for the dam should be procured this winter, and the dam finished by the first of August next.

Perfecting and securing the banks can be done after the opening of navigation next spring. The materials for locks should be procured next summer and as much other work on the locks as can be done without interrupting or incommoding navigation, and to complete the locks by the opening of navigation in the spring of 1864.

The general belief that nothing more is to be done to increase the capacity of the canal on the Western Division is fallacious; business demands it and it must be done.

Repairs.

There is much work yet required to be done on the Western Division to put the Erie canal in proper repair.

There was so much delay made in the progress of the enlargement during several years, that, in order to get the best possible channel for boats then being used, the banks were left too light, bridge embankments were not built out to proper dimensions, slope walls were left out, and the culverts were not made saf. Since the greater draft of boats have been used, requiring mor depth of water, their defects have become more apparent. Man banks require strengthening, and bottom of canal is yet to b excavated in many places.

The system of keeping the canal in repair by contract in man respects works well, and it is advantageous and economical t the State; still the system is not fully matured to derive from i the greatest advantage.

The contractors are not generally disposed to renew th structures, and it requires the utmost vigilance of energeti agents of the State to get all the work done to keep the canal i fair repair. Again, questions frequently arise whether certai work belongs properly to the repairs under the contract, or whether it is not extra—different from the manner it was constructed.

A far better system, in the opinion of the undersigned, would be to measure the work, when quantities are required, and pa for the same at specified prices; and for lock-tending, watchin banks, or general care of the water, and of superintendence, a gross amount could be paid.

GENESEE VALLEY CANAL.

Since the last annual report, the extension of the Genese Valley canal has been completed. Nothing has been done on the other work under contract.

Navigation.

The damages caused by the great flood of September 27th and 28th, 1861, were so far repaired that navigation opened in the spring of 1862—about the same time of the opening of the Eri canal.

The summer has been a very dry one, and the navigation has suffered for want of water more than usual, and for longer periods.

For several weeks the Genesee river at Mount Morris supplied only enough for a very limited number of boats, and they were passed along by filling some two or three levels at a time, whil at Dansville this course was pursued during a large part of the summer. (This manner of keeping up navigation at Dansville has been resorted to more or less since the opening of the canal.)

The Genesee river at Oramel, for a few weeks, was not quite sufficient to keep up the canal to full navigable height; and the Cuba summit failed for passing loaded boats about the 25th of August—when the waters of Oil creek reservoir were exhausted —and there was not water enough again for loaded boats until about the 25th of October.

The reservoir failed earlier than any year before, and the fall of rains commenced much later.

Repairs.

The repairs of the damage caused by the great flood of September, 1861, were done on repair section No. 1 by the Superintendent (except the abutments and some other work on the Shaker aqueduct), and on repair sections Nos. 2 and 3, by the contractor for keeping said section in repair.

The quantity of work done on repair section No. 2 was ascertained by measurements under the charge of the engineers.

The proportion the State paid to repair the same damage on repair section No. 3 was derived from the accounts furnished by the contractors.

From the foregoing it will be seen that the great repairs, where the State is liable, were made under the three different modes, viz:

1st. By Superintendents.

2d. By contractors furnishing their accounts of labor and materials.

3d. By measurements at specified prices.

The conclusions which the undersigned has drawn from the same are embodied in another part of this report.

In the foregoing repairs the banks were better protected than before the casualty, which will, in many instances, prevent damage from similar floods and lessen the damage in other places.

The Genesee river, where the canal crosses at Mount Morris, and which has been filling up with sediment since the dam went out in 1853, has been thoroughly dredged out this season.

THE REPAIRS TO BE DONE.

The repairs necessary on Superintendent section, No. 1, are widening the canal on the berme side, and placing the earth on the inside of the towing path along the embankment, where the towing path has so far slid off as to be both narrow and low and in some places to drive piles to prevent further slides, and to reconstruct several waste weirs where the present ones were undermined, and to finish the Shaker aqueduct now in progress.

On repair section No. 2, it is desirable to form a bank of earth protected on the back with stone, in place of two trunks near Portageville, and to build three stone locks in place of three wood locks.

And on repair section No. 3, to dredge out at the upper end of the canal, where it connects with the Oswego creek and the Allegany river, and to furnish a more ample supply of water for Cuba summit.

The upper section of the canal has been in use a sufficient length of time to satisfy the most sanguine that the summit is not supplied with water for all the wants of navigation. Other reservoirs are required.

I believe there has been only one year since the canal was opened when the supply was sufficient. This was in the summer of 1860. It was nearly so, however, in 1861. Dredging will be required every year at the Allegany and Oswego creek, from the sand and slabs that will drift in and settle in the still waters of the canal.

The trunks have been built so long that the timber work is getting unsafe. The foundation in which they stand, and which had a tendency to slide during the construction of the canal, appears to have become solid from the work which has been done to protect it.

The wooden locks, some 11 in number, on repair section No. 2 were built on a poor plan, and their sides are now pressed in by quicksand.

It is advisable to rebuild the same with stone as fast as they become unsafe.

The materials for three of which should be provided in the summer of 1863, and built and brought into use in the spring of 1864.

Respectfully submitted,
(Signed,) ORVILLE W. STOREY,
Engineer, Western Division.

TABLE No. 1.

Showing the number and compensation of Engineers employed upon the New York State Canals, together with incidental expenses, from October 1st, 1861, *to September 30th,* 1862.

ENLARGEMENT OF ERIE CANAL.

WESTERN DIVISION.

Names.	Rank.	No. of days employed.	Rate of compensation.	Amount.
Orville W. Storey	Division engineer		$2,000 00	$1,166 66
do	(Travel)			446 18
Daniel Richmond	Resident engineer		1,700 00	1,180 54
do	(Travel)			415 38
J. Nelson Tubbs	2d assistant engineer	301	3 00	903 00
Joseph W. Sprague	2d do do	250	3 00	750 00
L. L. Nichols	2d do do	156	3 00	468 00
Byron Holley	2d do do	142	2 50	355 00
George Arnolds	2d assistant engineer and clerk division engineer	270	3 50	945 00
David Vaughan	Draughtsman	79	3 00	237 00
John Bisgood	do	239	2 00	478 00
Denison Richmond	Rodman	308	1 50	462 00
Willis Nichols	do	10½	1 50	15 75
John H. Childs	Chainman	25	1 50	37 50
Wm. Blackmer	do	41	1 50	61 50
Edward W. Bangs	Tapeman	2½	1 00	2 50

John McChesner	Axeman	6	1 25	7 50
John M. Boulton	do	15½	1 25	19 37
	Incidental expenses.			
Stationery				121 17
Office rent, fuel and light				291 90
Postage, telegraph and express				235 05
Affidavits				32 70
Miscellaneous				120 66
Total				$8,752 36
Ensign Bennett	Resident engineer			$1,700 00
do	(Travel)			790 00
Stephen F. Gooding	1st assistant engineer	313	4 00	1,252 00
Charles B. Morse	2d do do	313	3 00	939 00
Stephen D. Charles	2d do do	313	3 00	939 00
Charles M. Plumb	2d do do	8	3 00	24 00
Frederick Osborne	Draughtsman	307	2 00	614 00
J. Frederick Behn	do	157	2 00	314 00
do	Inspector	156	2 00	312 00
Theodore B. Samo	do	131	2 00	262 00
do	Leveler	13	1 75	22 75
do	do	103	2 00	206 00
A. S. Gooding	do	79	1 75	138 25
do	do	117	2 00	234 00

TABLE No. 1.—Continued.

Names.	Rank.	No. of days employed.	Rate of compensation.	Amount.
John A. Ditto	Surveyor	94	$3 00	$282 00
H. Seymour, jr	Chainman	110	1 50	165 00
do	Rodman	103	1 50	154 50
Charles H. Moore	do	114	1 50	171 00
James H. Smith	do	243	1 50	364 50
Walter Griswold	do	113	1 50	169 50
Charles L. Smith	do	65	1 50	97 50
F. N. Hamlin	do	4	1 50	6 00
Jasper Youngs	do	74	1 50	111 00
L. D. Loomis	Axeman	10	1 00	10 00
Smith Reynolds	do	13	1 00	13 00
Frank J. Sawyer	do	55	1 25	68 75
Richard Reed	do	100	1 25	125 00
Alfred W. Barrett	do	59	1 25	73 75
Charles Eighmy	do	31	1 25	46 50
Incidental expenses.				
Labor				7 11
Stationery				134 11
Office rent, fuel and light				468 07
Postage, telegraph and express				78 63

Affidavits				24 00
Miscellaneous				40 74
Total				$10,357 66

GENESEE VALLEY CANAL.

Orville W. Storey	Division engineer		$2,000 00	$833 34
do	(Travel)			381 71
Daniel Richmond	Resident engineer		1,700 00	519 46
do	(Travel)			145 62
George Porter	1st assistant engineer	313	4 00	1,252 00
J. Nelson Tubbs	2d do do	12	3 00	36 00
Joseph W. Sprague	2d do do	21	3 00	63 00
Byron Holley	2d do do	171	2 50	427 00
George Arnolds	Assistant engineer and clerk	43	3 50	150 50
John Bisgood	Draughtsman	36	2 00	72 00
Josiah Battles	Rodman	1⅔	1 50	2 50
John McArthur	Inspector	50	3 00	150 00

Incidental expenses.

Stationery			6 97
Office rent, fuel and light			110 50
Postage, telegraph and express			11 63
Affidavits			1 80
Total			$4,164 03

TABLE No. 1.—Continued.

Summary of expenses of the Engineer Department, for the fiscal year ending September 30th, 1862.

Names of Canals.	Amounts.	Totals.
Erie, eastern division	$8,995 36	
do middle division	8,653 19	
do western division	19,110 02	
		$36,758 57
Champlain		6,316 85
Black River		3,909 60
Oswego		6,165 46
Cayuga and Seneca		3,837 87
Chemung		4,140 03
Chenango		2,041 54
Crooked Lake		137 68
Genesee Valley		4,164 03
Total		$67,471 63

TABLE No. 2.

STATEMENT *showing the length in miles, number of structures, character of work, estimated cost at contract prices, amount of work done during fiscal year ending September 30th,* 1862, *whole amount of work done including interest and work completed or settled, with the characteristic detail of contracts existing, during the year ending September* 30, 1862, *upon the New York State Canals.*

ENLARGEMENT OF THE ERIE CANAL.

Length in miles.	No. of struct'rs	CHARACTER OF WORK.	Estimated cost at contract prices.	Am't done for fiscal year ending Sept. 30, 1862.	Whole amount done including interest.	Completed or settled.
		EASTERN DIVISION.				
4.14	....	Sections Nos. 41, 42, 43, and 44	$28,969 98	$2,799 98	$28,969 98	Settled.
	....	Add interest in pursuance of act, chap. 734, Laws of 1857	....	....	435 61	
2.98	....	Sections Nos. 45, 46, and 47	34,055 83	726 83	34,055 83	do
	....	Add interest in pursuance of act, chap. 734, Laws of 1857	....	....	407 62	
.98	....	Section No. 60	42,303 16	5,363 16	42,303 16	do
	....	Add interest in pursuance of act, chap. 734, Laws of 1857	....	....	878 93	
1.36	....	Section No. 62	129,948 86	7,448 84	129,948 86	Completed.
	....	Add interest in pursuance of act, chap. 734, Laws of 1857	....	....	2,845 14	do
	3	Bridge abutments on sections Nos. 33 and 35	6,837 15	1,127 15	6,837 15	Settled.
3.53	....	Completion of enlargement from west end of section No. 47 to lock No. 29	10,352 24	2,472 24	10,352 24	do
3.25	....	Bottoming canal below and raising banks above lock No. 34, and raising banks between locks Nos. 39 and 40	21,014 87	2,274 87	21,014 87	do
1.60	....	Bottoming canal below lock No. 42, and raising banks on sec. No. 127	2,154 78	94 78	2,154 78	do
			$275,636 87	$22,306 85	$280,204 17	
		Work autherized by act, chapter 213, Laws of 1860:				
	25	Raising bridge superstructures on superintendent section No. 1	$3,912 78	$402 78	$3,912 78	do
	43	do do do do No. 2	5,682 97	972 97	5,682 97	do
	38	do do do do No. 3	3,373 10	293 10	3,373 10	do
	24	do do do do No. 4	2,120 12	150 12	2,120 12	do
	29	do do do do No. 5	7,527 22	1,077 22	7,527 22	do
			$22,616 19	$2,896 19	$22,616 19	

TABLE No. 2.—Continued.

Length in miles.	No. of struct'rs	CHARACTER OF WORK.	Estimated cost at contract prices.	Amount done for fiscal year ending Sept. 30, 1862.	Whole amount done including interest.	Completed or settled.
		Work let by Canal Commissioners:				
	....	Vertical wall on sec. No. 108, in the city of Utica	$8,672 66	$8,672 66	$8,672 66	Settled.
	....	Bottoming Erie canal through the city of Utica	10,680 83	890 83	10,680 83	do
	....	Raising banks on secs. No. 83 and 84, and bot'g canal on sec. No. 84	2,352 35	952 35	2,352 35	do
	....	Raising banks and bottoming canal at west end of repair sec. No. 3	6,594 28	6,594 28	6,594 28	do
	....	Iron bridge superstructure over Erie canal in Van Vleet st., Cohoes	3,600 00	3,000 00	3,000 00	do
			$31,300 12	$20,110 12	$31,300 12	
		MIDDLE DIVITION				
0.67	....	Section (west half) No. 203	$123,591 24	$23,959 24	$123,591 24	Settled.
	....	Add interest in pursuance of act, chap. 734, Laws of 1857	....	....	1,261 48	
1.38	....	Section No. 204	85,958 62	5,450 62	85,958 62	Completed.
	1	*De Ruyter Reservoir	78,114 44	42,004 44	78,114 44	do
	....	†Removing obstructions from outlet of Seneca lake	30,000 00	....	30,000 00	
	11	Raising bridges on repair sections No. 7 and 8	12,756 10	7,676 10	12,756 10	Settled.
	11	do do do No. 9	8,994 21	4,374 21	8,994 21	do
	14	do do do No. 7	8,245 98	1,265 98	8,245 98	do
	19	do do do No. 9	6,690 43	2,550 43	6,690 43	do
	....	Extra work on repair section No. 8	27,613 96	5,235 49	26,415 49	Completed.
	....	do do No. 9	14,838 01	14,098 01	14,838 01	Settled.
			$396,802 99	$106,614 52	$396,866 00	
		WESTERN DIVISION.				
1.09	....	Section No. 210	$3,859 52	....	$3,859 52	Settled.
1.09	....	do No. 211	11,816 23	....	11,816 23	do
2.30	....	do No. 252 and 257	7,559 57	$3,179 57	7,559 57	do
4.66	....	do Nos. 259, 260, 261 and 262	14,734 80	4,664 80	14,734 80	do
0.18	....	do No. 1, east of Rochester	3,093 11	545 11	3,093 11	do
4.73	....	do Nos. 271 and 282, and Genesee River feeder	5,410 66	710 66	5,410 66	do
1.29	....	do No. 289	140,263 84	7,143 84	140,263 84	do
2.43	....	do Nos. 316, 320, 321, and 324	12,901 96	9,841 96	12,901 96	Completed.
[illegible]	....	Section No. 6, Mountain Ridge	107,361 36	2,198 36	107,361 36	do

0.50		do No. 7, Mountain Ridge	108,357 10	472 10	108,357 10	do
0.50		do No. 8, do	104,552 15	3,288 15	104,552 15	do
0.50		do No. 9, do	92,019 05	2,909 05	92,019 05	do
0.50		do No. 10, do	100,672 15	2,080 15	100,672 15	do
0.50		do No. 13, do	99,878 00		99,878 00	do
0.36		do No. 14, do	75,508 00		75,508 00	do
11.58		Dredging and excavating channel in Tonawanda creek, secs. 348 to 359, inclusive	30,435 41	6,315 41	30,435 41	Settled.
5.00		Sections Nos. 361, 362, 363, 365, and 366, (re-let)	28,511 95	13,091 95	28,511 95	do
		Allowance by Canal Board pursuant to act, chap. 164, Laws of 1862			20,000 00	do
1.00		Section No. 364	56,000 00	10,260 00	56,000 00	do
		Allowance by Canal Board pursuant to act, chap. 164, Laws of 1862			3,641 93	do
		Sections Nos. 361, 362, 365, and 366, (old contract)	28,780 11		28,780 11	do
		Allowance by Canal Board pursuant to act, chap. 321, Laws of '62			6,034 11	do
	1	Waste weir on section No. 232	2,256 99		2,256 99	do
	1	do do No. 360	160 00		160 00	Completed.
	1	Ship lock at Black Rock	69,157 95		69,157 95	Settled.
	1	Valves for guard lock and gates at Black Rock	1,527 13		1,527 13	do
	1	Erie basin and slips	97,448 01	33,788 00	97,448 01	Completed.
	6	Iron bridge superstructures on secs. Nos. 219 and 241, inclusive	11,154 06		11,154 06	Settled.
	6	do do do Nos. 264 and 275, inclusive	18,480 75		18,480 75	do
		Add interest in pursuance of act, chap. 734, Laws of 1857			577 71	do
	5	Iron bridge superstructure on secs. Nos. 310 to 326, inclusive	14,738 17		14,738 17	do
		Add interest in pursuance of act, chap. 734, Laws of 1857			528 16	do
	1	Iron change bridge superstructure on section 361	1,910 12		1,910 12	do
	1	Abutments and iron bridge superstructure, Louisiana st., Buffalo	6,687 50	1,487 50	6,687 50	do
			$1,256,235 14	$101,971 10	$1,287,017 05	
		Work added since last annual report:				
10.84		Sections Nos. 208, 209, 212, 213, 214, 215, 216, 217, 218, 219, 228, and 229	$2,710 36	$2,710 36	$2,710 36	Settled.
15.81		Sections Nos. 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 246, and 247	1,565 68	1,565 68	1,565 68	do
8.60		Sections Nos. 248, 249, 250, 251, 256, 258, and 264	2,606 29	2,606 29	2,606 29	do
9.16		do Nos. 265, 272, 273, 275, 276, 278, 279, 280, and 281	2,905 13	2,905 13	2,905 13	do
6.84		do Nos. 287, 291, 292, 293, 294, 295, and 296	3,829 36	3,829 36	3,829 36	do
5.88		do Nos. 297, 298, 310, 311, 312, and 313	7,947 12	7,947 12	7,947 12	Completed.
3.14		do Nos. 314, 315, and 317	1,762 63	1,762 63	1,762 63	Settled.
5.56		do Nos. 318, 319, 322, 323, and 325	7,680 42	7,680 42	7,680 42	do
11.75		do Nos. 326 to 337, both inclusive	3,243 84	3,243 84	3,243 84	do

* Work not fully completed, but suspended by act, chap. 169, Laws of 1862. † Work not completed; appropriation exhausted. ‡ Am't remaining to be done.

TABLE No. 2.—Continued.

Length in miles.	No. of struct'rs	CHARACTER OF WORK.	Estimated cost at contract prices.	Amount done for fiscal year ending Sept. 30, 1862.	Whole amount done including interest.	Completed or settled.
	1	Timber bridge superstructure and abutments at Hamilton street, Buffalo	$5,138 36	$5,138 36	$5,138 36	Settled.
			$39,389 19	$39,389 19	$39,389 19	
		Raising bridges under act, chapter 213, Laws of 1860:				
		Completed prior to October, 1861	$694 73		$694 73	
	5	At Lyons, Port Gibson, and Macedon, on Supt. sec. No. 10	944 98	$944 98	944 98	Settled.
	2	At R. R. Avenue and Church st. Palmyra, on Supt. sec. No. 10	1,082 76	1,082 76	1,082 76	do
	3	At Washington, Ford, and Allen sts. Rochester, do No. 11	766 76	766 76	766 76	do
		Near Pittsford, at Monroe st. near foot of lock No. 66, and at Rochester Weigh lock superintendent section No. 11	393 66	393 66	393 66	do
			$3,882 89	$3,188 16	$3,882 89	

CHAMPLAIN CANAL.

Length in miles.	No. of struct'rs	CHARACTER OF WORK.	Estimated cost at contract prices.	Amount done for fiscal year ending Sept. 30, 1862.	Whole amount done including interest.	Completed or settled.
		Driving piles on 16 and 5 mile levels	$18,180 00	$4,430 00	$14,050 00	*$4,130 00
	1	Rebuilding Bassett lock (No. 10) enlarged	14,823 36	163 36	14,823 36	Settled.
1.17		Raising banks of Champlain canal from Erie to lock No. 1	4,381 70	111 70	4,381 70	do
		Weigh lock and weighmaster's office at Waterford	22,115 70	19,075 70	22,115 70	do
	1	Parish lock No. 17, on Wood creek	20,000 00	18,370 00	18,370 00	*$1,630 00
	1	South guard lock at Cohoes	14,274 40	14,274 40	14,274 40	Completed.
	1	Scale for weigh lock at Waterford	3,500 00	3,500 00	3,500 00	Settled.
	1	Culvert and coffer dam for weigh lock at Waterford	3,499 69	1,649 69	3,499 69	do
0.66		Section No. 1, stopping leaks in Glens Falls feeder	25,474 00	12,050 00	12 050 00	*13,424 00
1.00		do No. 2, do do do	21,334 00	6,710 00	6,710 00	*4,624 00
			$147,582 85	$80,334 85	$113,774 85	$23,808 00

BLACK RIVER CANAL.

	4	Bridges for Delta feeder	$2,086 22	$286 22	$2,086 22	Settled.
	....	Add interest in pursuance of act, chapter 734, Laws of 1857	....	....	36 05	do
	2	Dam and lock at or near Otter Creek	44,421 91	7,531 91	44,421 91	do
	1	South Branch reservoir	11,196 27	1,226 27	11,196 27	do
	1	Bridge across Black river at Carter's landing	8,981 00	5,210 00	5,800 00	†$3,181 00
	1	do do Tiffany's do	8,554 90	4,640 00	7,530 00	†1,024 90
			$75,240 30	$18,894 40	$71,070 45	4,205 90

ENLARGEMENT OF THE OSWEGO CANAL.

1.00	....	Part of sections No. 16 and 17	$21,593 34	$135 40	$21,593 34	Settled.
1.00	....	Section No. 19	39,678 88	1,244 36	39,678 88	Completed.
1.09	....	Parts of sections No. 21 and 22	20,395 15	2,548 68	20,395 15	do
.96	....	Parts of sections No. 22 and 23	30,952 00	9,127 58	30,952 00	do
3.43	....	Sections No. 24, 25, and 26, and part of 27, (re-let)	8,514 69	3,651 16	8,514 69	Settled.
1.14	....	Parts of sections No. 31 and 32	71,233 28	2,908 40	71,233 28	Completed.
0.61	....	Parts of section No. 34, (re-let)	2,892 00	571 00	2,892 00	Settled.
0.90	....	Part of section No. 35	44,815 32	4,227 64	44,815 32	do
0.20	....	Part of section No. 37	12,760 58	193 80	12,760 58	do
	1	Lift lock No. 6	24,644 13	917 13	24,644 13	do
	3	Iron bridge superstructures	14,256 00	549 50	14,256 00	do
	3	Bridges on sections Nos. 28, 29, and 31	6,254 61	336 88	6,254 61	do
	11	Raising bridges on rapair section No. 1	3,449 99	554 13	3,449 99	do
	12	do do No. 2	2,511 02	1,294 77	2,511 02	do
			$303,950 99	$28,260 43	$303,950 99	

ENLARGEMENT OF THE CAYUGA AND SENECA CANAL.

1.00	....	Section No. 1	$5,393 21	....	$5,393 21	Settled.
1.00	....	do No. 2	7,951 95	....	7,951 95	do
1.00	....	do No. 3	9,337 11	....	9,337 11	do
0.86	....	do No. 4	6,785 87	$3,655 87	6,785 87	Completed.
1.00	....	do No. 6	5,096 32	3,143 32	5,096 32	Settled.
3.50	....	do No. 8	41,354 22	2,374 22	41,354 22	do

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* Amounts remaining to be done, act, chapter 169, Laws of 1862, does not apply to the Champlain canal.

† Amounts remaining to be done, work constructed under act, chapter 213, Laws of 1860.

TABLE No. 2.—Continued.

Length in miles.	No. of struct'rs	CHARACTER OF WORK.	Estimated cost at contract prices.	Amount done for fiscal year ending Sept. 30, 1862.	Whole amount done including interest.	Completed or settled.
	....	Add interest in pursuance of act, chapter 734, Laws of 1857	....	....	$1,240 16	Settled.
2.28	....	Section No. 11	$20,979 72	$2,319 72	20,979 72	Completed.
2.28	....	do No. 11, (re-let)	2,088 08	2,088 08	2,088 08	Settled.
4.48	....	do No. 12	42,829 53	5,809 53	42,829 53	do
	....	And interest in pursuance of act, chapter 734, Laws of 1857	....	....	1,197 27	do
2.68	....	Section No. 13	57,991 14	14,751 14	57,991 14	do
0.81	....	Section No. 7	201 01	201 01	201 01	do
	....	Guard gate on section No. 9	592 26	592 26	592 26	Completed.
	....	Extension of retaining wall on section No. 10	6,563 45	6,563 45	6,563 45	Settled.
			$207,163 87	$41,498 58	$209,601 30	

GENESEE VALLEY CANAL.

Length in miles.	No. of struct'rs	CHARACTER OF WORK.	Estimated cost at contract prices.	Amount done for fiscal year ending Sept. 30, 1862.	Whole amount done including interest.	Completed or settled.
6.70	....	Extension of the Genesee Valley canal from Olean to Millgrove pond	$79,370 88	$5,890 88	$79,370 88	Settled.
	1	Lock No. 106, including valves	1,180 00	....	1,180 00	do
			$80,550 88	$5,890 88	$80,550 88	

SUMMARY OF TABLE No. 2.

NAME OF CANAL.	Estimated cost at contract prices.	Amount done in fiscal year ending Sept. 30, 1862.	Whole amount done including interest.	Amount remaining to be done.
Erie canal, Eastern Division	$329,553 18	$45,313 16	$334,120 48	
do Middle Division	396,802 99	106,614 52	396,866 00	
do Western Division	1,299,507 22	144,548 45	1,380,289 13	
Total Erie canal	$2,025,863 39	$296,476 13	$2,061,275 61	
Champlain	147,582 85	80,334 85	113,774 85	$33,808 00
Black River	75,240 30	18,894 40	71,070 45	4,205 90
Oswego	303,950 99	28,260 43	303,950 99	
Cayuga and Seneca	207,163 87	41,498 58	209,601 30	
Genesee Valley	80,550 88	5,890 88	80,550 88	
Totals	$2,840,352 28	$471,355 27	$2,840,224 08	$38,013 90

TABLE No. 3.

STATEMENT *showing amount of work done under supervision of Engineer Department on repairs under contract, and miscellaneous repairs, upon the New York State canals in the fiscal year ending September* 30, 1862.

Character of work.	Estimated cost at contract prices.	Amount done in fiscal year ending September 30, 1862.	Whole amount done.	Amount remaining to be done.
ERIE CANAL.				
Eastern Division:				
Rebuilding Schoharie creek dam	$22,000 00	$11,320 00	$17,140 00	$4,860 00
Removing big bevels from locks on Superintendent section No. 2	1,787 50	212 50	1,787 50	....
Arch culvert on section No. 30	3,179 10	3,179 10	3,179 10	....
Miscellaneous:				
Repairs of Sauquoit creek aqueduct	....	44 27	....	....
Sewer in William street, Utica	....	167 14	....	....
Whitall creek culvert	....	140 00	....	....
Iron bridge superstructure over feeder at Little Falls	....	1,778 13	....	....
Farm do do in Danube	....	582 89	....	....
Raising abutments to feeder bridge at Little Falls	....	1,048 65	....	....
Raising abutments and embankments to Iron Br., Fultonville	....	326 24	....	....
Removing and rebuilding Change bridge, Lower Mohawk aqueduct	....	1,206 00	....	....
Rebuilding and raising superstructure, Carter's Ferry	....	264 20	....	....
Repairing berme bank, near Printup's aqueduct	....	181 50	....	....
Graveling bank on section No. 58	....	135 00	....	....
	$26,966 60	$20,585 62	$22,106 60	$4,860 00
Middle Division:				
Culvert near Canastota	$2,700 00	$680 00	$680 00	$2,020 00
Bridge at Manlius	890 15	890 15	890 15	....
	$3,590 15	$1,570 15	$1,570 15	$2,020 00
Western Division:				
Stop gate on section No. 246	$2,443 [illegible]	$[illegible]	$2,443 [illegible]	....
do do No. 334	2,40[illegible] 15	1,[illegible] 15	2,40[illegible] 15	....

Repairing culverts on repair section No. 12	$15,558 76	$15,558 76	$15,558 76	
Repairing break in old canal at Holley	28,463 00	11,420 00	11,420 00	17,043 00
Miscellaneous:				
On repair section No. 10		11,156 52		
do do 11		8,809 62		
do do 12		3,774 23		
do do 13		489 44		
do do 14		6,205 22		
	$49,870 45	$59,811 48	$32,827 45	$17,043 00
CHAMPLAIN CANAL.				
Miscellaneous:				
New pier at Empey's waste weir		$24 32		
Improvement of channel at Eastman's waste weir		894 67		
Rebuilding waste weir at Smith's basin		204 88		
Improvement of dam over Mohawk at Cohoes		2,249 76		
		$3,373 63		
BLACK RIVER CANAL				
Miscellaneous:				
Box drain at Delta feeder		$254 12		
Improvement of Welles' brook aqueduct		683 00		
Iron bridge superstructure at Rome		1,640 00		
		$2,577 12		
OSWEGO CANAL.				
Waste weir between locks 9 and 10	$335 58	$335 58	$535 58	
Raising tow-path below lock No. 11	476 42	476 42	476 42	
Removing cemented sand and gravel and rock above New bridge	750 00	750 00	750 00	
Repairing broken wall at Oswego	6,600 00	2,400 00	2,400 00	$4,200 00
New crib at High dam	233 28	233 28	233 28	
New crib at Horse Shoe dam	1,200 00	200 00	200 00	1,000 00
Repairing dam at Baldwinsville	2,000 00	2,000 00	2,000 00	
Apron to Bloody brook culvert	950 00	600 00	600 00	350 00
Rebuilding Mud lock	41,000 00	41,000 00	41,000 00	
Dredging channel around Mud lock	707 00	707 00	707 00	
Waste weir on Liverpool level	2,800 00	2,800 00	2,800 00	
	$57,052 28	$51,502 28	$51,502 28	$5,550 00

TABLE No. 3.—Continued.

Character of work.	Estimated cost at contract prices.	Amount done in fiscal year ending September 30, 1862.	Whole amount done.	Amount remaining to be done.
CAYUGA AND SENECA CANAL.				
Excavating outlet of Seneca lake	$5,500 00	$860 00	$860 00	$4,640 00
Bridge at Evans street, Geneva	800 00	....	....	800 00
	$6,300 00	$860 00	$860 00	$5,440 00
CHENANGO CANAL.				
Lock No. 89	$5,043 94	$5,043 94	$5,043 94	....
Sherburne aqueduct	11,183 82	6,343 82	11,183 82	....
Road bridge at Norwich	1,032 43	1,032 43	1,032 43	....
	$17,260 19	$12,420 19	$17,260 19	....
CHEMUNG CANAL.				
Locks Nos. 12, 14, 34, 38, 39, 42, 44, 50, 51, 52	$89,214 46	$88,694 46	$89,214 46	....
Bridge over Catharine creek	1,365 00	1,020 00	1,020 00	$345 00
Repairs of docking at Corning, guard pier at Gibson's, and berme docking at head of guard lock at Gibson's	3,921 82	3,921 82	3,921 82	....
	$94,501 28	$93,636 28	$94,156 28	$345 00
GENESEE VALLEY CANAL.				
Repairs of break 27th and 28th September, 1861, on repair section No. 2	$39,612 14	$32,095 93	$32,095 93	$7,516 21
Repairs on repair section No. 3	17,642 17	17,642 17	17,642 17	....
Miscellaneous:				
On repair section No. 1	....	856 52	....	....
On repair section No. 2	....	162 88	....	....
On repair section No. 3	....	2,571 26	....	....
	$57,254 31	$53,828 76	$49,738 10	$7,516 21

SUMMARY OF TABLE No. 3.

NAME OF CANAL.	Estimated cost at contract prices.	Amount done in fiscal year ending September 30, 1862.	Whole amount done.	Amount remaining to be done.
Erie canal, Eastern Division	$26,966 60	$20,585 62	$22,106 60	$4,860 00
do Middle Division	3,590 15	1,570 15	1,570 15	2,020 00
do Western Division	49,870 45	59,811 48	32,827 45	17,043 00
Total Erie canal	$80,427 20	$81,967 25	$56,504 20	$23,923 00
Champlain canal	....	3,373 63	....	....
Black River canal	....	2,577 12	....	....
Oswego canal	57,052 28	51,502 28	51,502 28	5,550 00
Cayuga and Seneca canal	6,300 00	860 00	860 00	5,440 00
Chenango canal	17,260 19	12,420 19	17,260 19	....
Chemung canal	94,501 28	93,636 28	94,156 28	345 00
Genesee Valley Canal	57,254 31	53,328 76	49,738 10	7,516 21
Total	$312,795 26	$299,665 51	$270,021 05	$42,774 21

TABLE No. 4.

STATEMENT *showing No. of section, commencement and expiration of contract, name of contractor, length in miles, amount per annum, and location of repair sections under contract on the New York State canals.*

Number of section.	Commencement.	Expiration.	Name of contractor.	Length in miles.	Price p'r annum.	Description.
Erie, section 1	March 4, 1860	March 4, 1863	Charles T. Baldwin	19	$28,440	From Albany to north end Lower Mohawk aqueduct.
do 2	March 4, 1860	March 4, 1863	Wm. McClary	32	9,700	From north end Lower Mohawk aqueduct to head of lock No. 27.
do 3	May 1, 1862	Jan. 1, 1867	Jared P. Dodge, Jr., assigned to Geo. H. Peck	33	10,900	From head of lock No. 27 to foot of lock No. 34.
do 4	May 1, 1862	Jan. 1, 1867	Hosch & Lowell	24	12,780	From foot of lock No. 34 to head of lock No. 45.
do 5	March 4, 1860	March 4, 1863	Eli T. Bangs	34	5,890	From head of lock No. 45 to Oneida Lake canal.
do 7	May 1, 1861	May 1, 1866	Thomas Gale	27	3,490	From Oneida Lake canal to Limestone Creek feeder.
do 8	Oct. 1, 1859	Oct. 1, 1862	Lewis Seelye	13	7,000	From Limestone Creek feeder to foot of lock No. 50.
do 9	May 1, 1861	May 1, 1866	Charles J. Hayden	35	7,000	From foot of lock No. 50 to east line of Wayne co.
do 10	March 4, 1860	March 4, 1863	John C. Hunt	42	9,439	From east line of Wayne co. to east line of Monroe co.
do 11	Oct. 1, 1859	Oct. 1, 1862	Myron H. Mills, assigned to Chauncey Dodge	38	6,280	From east line of Monroe county to west end of section No. 284, at Brockport.
do 12	April 1, 1862	Jan. 1, 1867	Edward A. Mills	30	6,700	From west end of sec. 284 to west line of Orleans co.
do 13	Mar. 15, 1861	Mar. 15, 1866	Francis Hitchins	26	9,800	From west line of Orleans county to Pickard's bridge, over Tonawanda creek.
do 14	March 1, 1860	March 1, 1863	Wm. H. Douglas	17	14,500	From Pickard's bridge to Buffalo.
Champlain, section 1	Not under cont.	....	....	28	....	From guard lock at Cohoes to foot of lock next north of Fort Miller bridge.
do 2	Aug. 1, 1860	Aug. 1, 1865	Anson Bangs	24	9,300	From foot of lock north of Fort Miller bridge to Dunham's basin.
do 3	Aug. 1, 1860	Aug. 1, 1865	Solon Vandenburgh, assigned to Wm. Burling	22	4,300	From Dunham's basin to Whitehall.
Black River canal, section 1	May 1, 1861	Jan. 1, 1866	Edw. H. Edwards	24	8,700	From Rome to 1,000 feet north of lock No. 70.
do do 2	March 1, 1861	March 1, 1866	Benj. F. Maxson	23	4,178	From 1,000 feet north of lock No. 70 to foot of dock below lock No. 109.
Black River improvement	Nov. 1, 1859	Nov. 1, 1864	Ward & McVickar	42¼	3,800	From Lyon's Falls to Carthage.

Chenango, section 1	May 1, 1861	May 1, 1866	A. Peck & Co.	31	13,990	From Utica to foot of lock No. 81.
do 2	Oct. 1, 1860	Oct. 1, 1865	John P. Smith	34	5,600	From foot of lock No. 81 to bridge next north of feeder below Oxford.
do 3	May 1, 1861	May 1, 1866	Josiah Brintnall, assigned to Snook & Beebe	32	7,000	From bridge north of feeder below Oxford to Binghamton.
Oneida Lake canal and feeder	Oct. 1, 1860	Oct. 1, 1865	Wm. R. Chapman	6	2,375	
Oswego, section 1	May 1, 1862	Jan. 1, 1867	Wm. Avery	21¼	9,000	From Syracuse to Three river point.
do 2	May 1, 1862	Jan. 1, 1867	Chas. E. Case	43	11,900	From Three river point to Oswego.
Cayuga and Seneca	July 1, 1862	Jan. 1, 1867	Geo. M. Case	23	9,950	
Crooked Lake canal	Oct. 1, 1860	Oct. 1, 1865	H. W. Randall, assigned to Farley Holmes	8	3,869	
Chemung canal and feeder	April 1, 1862	Jan. 1, 1867	James Bellows, assigned to Jarvis Lord	39	15,960	
Genesee Valley, section 1	Feb. 1, 1862	Feb. 1, 1867	Wm. McArthur	52	8,472	From Rochester to Dansville side cut.
do do 2	Mar. 15, 1861	Mar. 15, 1866	John Lambert, assigned to Geo. D. Lord	36	12,540	From Dansville side cut to Oramel.
do do 3	Aug. 1, 1860	Aug. 1, 1865	Wm. McArthur, assigned to Luckey & Martin	38	7,433	From Oramel to Millgrove pond, Allegany river.

TABLE No. 3.

STATEMENT *showing amount of work done under supervision of Engineer Department on repairs under contract, and miscellaneous repairs, upon the New York State canals in the fiscal year ending September* 30, 1862.

Character of work.	Estimated cost at contract prices.	Amount done in fiscal year ending September 30, 1862.	Whole amount done.	Amount remaining to be done.
ERIE CANAL.				
Eastern Division:				
Rebuilding Schoharie creek dam	$22,000 00	$11,320 00	$17,140 00	$4,860 00
Removing big bevels from locks on Superintendent section No. 2	1,787 50	212 50	1,787 50	....
Arch culvert on section No. 30	3,179 10	3,179 10	3,179 10	....
Miscellaneous:				
Repairs of Sauquoit creek aqueduct	....	44 27	....	....
Sewer in William street, Utica	....	167 14	....	....
Whitall creek culvert	....	140 00	....	....
Iron bridge superstructure over feeder at Little Falls	....	1,778 13	....	....
Farm do do in Danube	....	582 89	....	....
Raising abutments to feeder bridge at Little Falls	....	1,048 65	....	....
Raising abutments and embankments to Iron Br., Fultonville	....	326 24	....	....
Removing and rebuilding Change bridge, Lower Mohawk aqueduct	....	1,206 00	....	....
Rebuilding and raising superstructure, Carter's Ferry	....	264 20	....	....
Repairing berme bank, near Printup's aqueduct	....	181 50	....	....
Graveling bank on section No. 58	....	135 00	....	....
	$26,966 60	$20,585 62	$22,106 60	$4,860 00
Middle Division:				
Culvert near Canastota	$2,700 00	$680 00	$680 00	$2,020 00
Bridge at Manlius	890 15	890 15	890 15	....
	$3,590 15	$1,570 15	$1,570 15	$2,020 00
Western Division:				
Stop gate on section No. 266	$2,443 56	$488 56	$2,443 56	....
do do No. 334	3,405 13	1,909 13	3,405 13	....

Repairing culverts on repair section No. 12	$15,558 76	$15,558 76	$15,558 76	....
Repairing break in old canal at Holley	28,463 00	11,420 00	11,420 00	17,043 00
Miscellaneous:				
On repair section No. 10	....	11,156 52	....	....
do do 11	....	8,809 62	....	....
do do 12	....	3,774 23	....	....
do do 13	....	489 44	....	....
do do 14	....	6,205 22	....	....
	$49,870 45	$59,811 48	$32,827 45	$17,043 00
CHAMPLAIN CANAL.				
Miscellaneous:				
New pier at Empey's waste weir	....	$24 32	....	....
Improvement of channel at Eastman's waste weir	....	894 67	....	....
Rebuilding waste weir at Smith's basin	....	204 88	....	....
Improvement of dam over Mohawk at Cohoes	....	2,249 76	....	....
	....	$3,373 63	....	....
BLACK RIVER CANAL.				
Miscellaneous:				
Box drain at Delta feeder	....	$254 12	....	....
Improvement of Welles' brook aqueduct	....	683 00	....	....
Iron bridge superstructure at Rome	....	1,640 00	....	....
	....	$2,577 12	....	....
OSWEGO CANAL.				
Waste weir between locks 9 and 10	$335 58	$335 58	$335 58	....
Raising tow-path below lock No. 11	476 42	476 42	476 42	....
Removing cemented sand and gravel and rock above **New bridge**	750 00	750 00	750 00	....
Repairing broken wall at Oswego	6,600 00	2,400 00	2,400 00	$4,200 00
New crib at High dam	233 28	233 28	233 28	....
New crib at Horse Shoe dam	1,200 00	200 00	200 00	1,000 00
Repairing dam at Baldwinsville	2,000 00	2,000 00	2,000 00	....
Apron to Bloody brook culvert	950 00	600 00	600 00	350 00
Rebuilding Mud lock	41,000 00	41,000 00	41,000 00	....
Dredging channel around Mud lock	707 00	707 00	707 00	....
Waste weir on Liverpool level	2,800 00	2,800 00	2,800 00	....
	$57,052 28	$51,502 28	$51,502 28	$5,550 00

TABLE No. 3.—Continued.

Character of work.	Estimated cost at contract prices.	Amount done in fiscal year ending September 30, 1862.	Whole amount done.	Amount remaining to be done.
CAYUGA AND SENECA CANAL.				
Excavating outlet of Seneca lake	$5,500 00	$860 00	$860 00	$4,640 00
Bridge at Evans street, Geneva	800 00	....	....	800 00
	$6,300 00	$860 00	$860 00	$5,440 00
CHENANGO CANAL.				
Lock No. 89	$5,043 94	$5,043 94	$5,043 94	....
Sherburne aqueduct	11,183 82	6,343 82	11,183 82	....
Road bridge at Norwich	1,032 43	1,032 43	1,032 43	....
	$17,260 19	$12,420 19	$17,260 19	....
CHEMUNG CANAL.				
Locks Nos. 12, 14, 34, 38, 39, 42, 44, 50, 51, 52	$89,214 46	$88,694 46	$89,214 46	....
Bridge over Catharine creek	1,365 00	1,020 00	1,020 00	$345 00
Repairs of docking at Corning, guard pier at Gibson's, and berme docking at head of guard lock at Gibson's	3,921 82	3,921 82	3,921 82	....
	$94,501 28	$93,636 28	$94,156 28	$345 00
GENESEE VALLEY CANAL.				
Repairs of break 27th and 28th September, 1861, on repair section No. 2	$39,612 14	$32,095 93	$32,095 93	$7,516 21
Repairs on repair section No. 3	17,642 17	17,642 17	17,642 17	....
Miscellaneous:				
On repair section No. 1	....	856 52	....	....
On repair section No. 2	....	162 88	....	....
On repair section No. 3	....	2,571 26	....	....
	$57,254 31	$53,328 76	$49,738 10	$7,516 21

SUMMARY OF TABLE No. 3.

NAME OF CANAL.	Estimated cost at contract prices.	Amount done in fiscal year ending September 30, 1862.	Whole amount done.	Amount remaining to be done.
Erie canal, Eastern Division	$26,966 60	$20,585 62	$22,106 60	$4,860 00
do Middle Division	3,590 15	1,570 15	1,570 15	2,020 00
do Western Division	49,870 45	59,811 48	32,827 45	17,043 00
Total Erie canal	$80,427 20	$81,967 25	$56,504 20	$23,923 00
Champlain canal		3,373 63		
Black River canal		2,577 12		
Oswego canal	57,052 28	51,502 28	51,502 28	5,550 00
Cayuga and Seneca canal	6,300 00	860 00	860 00	5,440 00
Chenango canal	17,260 19	12,420 19	17,260 19	
Chemung canal	94,501 28	93,636 28	94,156 28	345 00
Genesee Valley Canal	57,254 31	53,328 76	49,738 10	7,516 21
Total	$312,795 26	$299,665 51	$270,021 05	$42,774 21

TABLE No. 4.

STATEMENT *showing No. of section, commencement and expiration of contract, name of contractor, length in miles, amount per annum, and location of repair sections under contract on the New York State canals.*

Number of section.	Commencement.	Expiration.	Name of contractor.	Length in miles.	Price p'r annum.	Description.
Erie, section 1	March 4, 1860	March 4, 1863	Charles T. Baldwin	19	$28,440	From Albany to north end Lower Mohawk aqueduct.
do 2	March 4, 1860	March 4, 1863	Wm. McClary	32	9,700	From north end Lower Mohawk aqueduct to head of lock No. 27.
do 3	May 1, 1862	Jan. 1, 1867	Jared P. Dodge, Jr., assigned to Geo. H. Peck	33	10,900	From head of lock No. 27 to foot of lock No. 34.
do 4	May 1, 1862	Jan. 1, 1867	Hosch & Lowell	24	12,780	From foot of lock No. 34 to head of lock No. 45.
do 5	March 4, 1860	March 4, 1863	Eli T. Bangs	34	5,890	From head of lock No. 45 to Oneida Lake canal.
do 7	May 1, 1861	May 1, 1866	Thomas Gale	27	3,490	From Oneida Lake canal to Limestone Creek feeder.
do 8	Oct. 1, 1859	Oct. 1, 1862	Lewis Seelye	13	7,000	From Limestone Creek feeder to foot of lock No. 50.
do 9	May 1, 1861	May 1, 1866	Charles J. Hayden	35	7,000	From foot of lock No. 50 to east line of Wayne co.
do 10	March 4, 1860	March 4, 1863	John C. Hunt	42	9,439	From east line of Wayne co. to east line of Monroe co.
do 11	Oct. 1, 1859	Oct. 1, 1862	Myron H. Mills, assigned to Chauncey Dodge	38	8,280	From east line of Monroe county to west end of section No. 284, at Brockport.
do 12	April 1, 1862	Jan. 1, 1867	Edward A. Mills	30	6,700	From west end of sec. 284 to west line of Orleans co.
do 13	Mar. 15, 1861	Mar. 15, 1866	Francis Hitchins	26	9,800	From west line of Orleans county to Pickard's bridge, over Tonawanda creek.
do 14	March 1, 1860	March 1, 1863	Wm. H. Douglas	17	14,500	From Pickard's bridge to Buffalo.
Champlain, section 1	Not under cont.	....	....	28	....	From guard lock at Cohoes to foot of lock next north of Fort Miller bridge.
do 2	Aug. 1, 1860	Aug. 1, 1865	Anson Bangs	24	9,300	From foot of lock north of Fort Miller bridge to Dunham's basin.
do 3	Aug. 1, 1860	Aug. 1, 1865	Solon Vandenburgh, assigned to Wm. Burling	22	4,300	From Dunham's basin to Whitehall.
Black River canal, section 1	May 1, 1861	Jan. 1, 1866	Edw. H. Edwards	24	8,700	From Rome to 1,000 feet north of lock No. 70.
do do 2	March 1, 1861	March 1, 1866	Benj. F. Maxson	23	4,178	From 1,000 feet north of lock No. 70 to foot of dock below lock No. 109.
Black River improvement	Nov. 1, 1859	Nov. 1, 1864	Ward & McVickar	42¼	3,800	From Lyon's Falls to Carthage.

Chenango, section 1	May 1, 1861	May 1, 1866	A. Peck & Co.	31	13,990	From Utica to foot of lock No. 81.
do 2	Oct. 1, 1860	Oct. 1, 1865	John P. Smith	34	5,600	From foot of lock No. 81 to bridge next north of feeder below Oxford.
do 3	May 1, 1861	May 1, 1866	Josiah Brintnall, assigned to Snook & Beebe	32	7,000	From bridge north of feeder below Oxford to Binghamton.
Oneida Lake canal and feeder	Oct. 1, 1860	Oct. 1, 1865	Wm. R. Chapman	6	2,375	
Oswego, section 1	May 1, 1862	Jan. 1, 1867	Wm. Avery	21¼	9,000	From Syracuse to Three river point.
do 2	May 1, 1862	Jan. 1, 1867	Chas. E. Case	43	11,900	From Three river point to Oswego.
Cayuga and Seneca	July 1, 1862	Jan. 1, 1867	Geo. M. Case	23	9,950	
Crooked Lake canal	Oct. 1, 1860	Oct. 1, 1865	H. W. Randall, assigned to Farley Holmes	8	3,869	
Chemung canal and feeder	April 1, 1862	Jan. 1, 1867	James Bellows, assigned to Jarvis Lord	39	15,960	
Genesee Valley, section 1	Feb. 1, 1862	Feb. 1, 1867	Wm. McArthur	52	8,472	From Rochester to Dansville side cut.
do do 2	Mar. 15, 1861	Mar. 15, 1866	John Lambert, assigned to Geo. D. Lord	36	12,540	From Dansville side cut to Oramel.
do do 3	Aug. 1, 1860	Aug. 1, 1865	Wm. McArthur, assigned to Luckey & Martin	38	7,433	From Oramel to Millgrove pond, Allegany river.

DOCUMENTARY SKETCH

OF THE

NEW YORK STATE CANALS,

BY

S. H. SWEET, *Deputy State Engineer and Surveyor.*

The Law passed April 10, 1862, declaring the enlargement and construction account of our New York State canals, closed on the 1st of September, 1862, makes this a proper occasion to present a few important facts concerning the rise and progress of our public works.

It is due to the memory of those statesmen of great and comprehensive intellects, who, unequaled in the past, and models for the future, planned and guided us through this gigantic canal policy, that a complete history, both legislative and financial, should be written under legislative authority.

In no period of our public records can such cogent reasoning, and earnest eloquence, be found, as in the earlier reports of canal officials and legislative committees, until our canal policy was fairly established. The undertaking was a stupendous one, and hence the necessity of profound and earnest arguments to mould public sentiment, and inspire confidence in the vast enterprise.

The public works of the old world were projected and encouraged under the patronage of powerful monarchies, and the extraordinary character of many of their designs has commanded the admiration of the civilized world; but it remained for a free State of the new world to create a new era in the history of internal improvements, and to complete an enterprise which has contributed more to the advancement of commerce and civilization than any similar work recorded in history.

The idea of controlling the trade of the west by linking the great lakes to the Hudson river, seems to have been entertained at an early day. The manner in which it should be perfected, however, was arrived at after many years of experiments in the improvement of natural channels. As the true theory of this idea progressed, it was found that not only could the lakes and rivers of the west and east be bound together by water communication, but that the smaller lakes and streams within the borders of our own State, by means of lateral canals, could be made tributaries to this avenue of commerce, affording outlets to the wealth and resources of the State as complete as could be desired.

At the commencement of our canals, engineering was a rare acquirement in this country, and we had no experienced contractors. The Canal Commissioners, on whom success or disaster depended, felt their way with caution. A powerful and vigilant opposition watched, with eagle eye, their movements. A disaster, however slight, might, in the hesitating condition of the public mind, have delayed the work for years, and perhaps forever.

Washington was the originator and promoter of canals in this country. In 1785, his great mind was intently fixed on the project of connecting the western waters, by artificial channels, with the Potomac, and improving the navigation of the Monongahelia, and other branches of the Ohio, principally with a view of diverting the fur trade from Detroit to Alexandria, instead of going to Montreal, as heretofore. In 1787, a canal, twenty-two miles long, was projected, from the head branch of Cooper's river (which empties into Charleston harbor) to the Santee, spreading in several branches over the greater part of the interior of the two Carolinas. Previous to the revolutionary war, Washington projected a canal from the Paspotawk river, through the Dismal Swamp, to a branch of the Elizabeth river passing by Norfolk, so as to connect the waters of the Chesapeake with those of the Albemarle Sound. Thus, the project of canals, to connect the waters in the Southern States, was familiar previous to 1788.

As early as December 16, 1768, the *improvement* of the Mohawk river in this State was recommended to the General Assembly by Sir Henry Moore, Governor of the then colony of New York. He proposed to improve the navigation at the Falls of Canajoharie by sluices, upon the plan then used on the Languedoc canal, in France. These improvements were for the benefit of the fur trade.

Christopher Calles petitioned the General Assemby, proposing a plan for improving the inland navigation on the Mohawk, Nov. 6, 1847.

In September, 1788, Elkanah Watson, from this State, who was conversant with Washington's canal project, conceived the practicability of counteracting Washington's favorite scheme, of diverting the western traffic to Alexandria, by connecting Wood creek with the Mohawk river, and improving the Mohawk with locks—thus establishing a water communication from the Hudson to Lake Ontario, via Oneida lake and river, and the Oswego river.

On the 5th of January, 1791, Governor George Clinton, in his speech to the Legislature, urged the necessity of improving the natural water channels, so as to facilitate communications with the frontier settlements.

On the 15th of February, 1791, a joint committee was appointed to enquire "what obstructions in the Hudson and Mohawk rivers would be proper to be removed." The materials collected by Mr. Watson in his travels through the State proved of great service to the committee, and secured the early passage of the first canal Law in this State, dated March 24, 1791.

This Law authorized the Commissioners of the Land Office to explore and survey the ground between the Mohawk, at Fort Stanwix, to Wood creek, for an artificial channel, and the Mohawk to the Hudson for improvements by locks, and to estimate the cost of the same. A sum not exceeding £100 was appropriated to defray the expense of the explorations. Elkanah Watson, Gen. Schuyler and Goldsborrow Banyer were appointed commissioners to conduct the survey.

The channel of commerce, previous to 1791, was up the Mohawk from Albany to Fort Stanwix, in boats of 5 tons burthen (carrying west 1½ to 2 tons, and down trip, or east, 5 tons), then transported two miles across the flats to Wood creek, down Wood creek into Oneida lake and river, into the Seneca and Oswego rivers, thence to Lake Ontario, and up Seneca river to Lakes Cayuga and Seneca. Salt at Salina was then worth 75 cents a bushel. By this mode of conveyance it cost from $75 to $100 per ton for transportation from Seneca lake to Albany. The time occupied in going from Albany to Seneca lake was 21 days, and in returning 8 days.

On the 3d of January, 1792, the Commissioners reported the cost to improve by locks and canals the route from Albany to Seneca lake, at $200,000. This favorable report induced the Legislature to pass the law incorporating the "NORTHERN AND WESTEDN INLAND LOCK NAVIGATION COMPANY, *passed March 30th*, 1792."

This law established two companies of stockholders—one for opening a lock navigation from the Hudson to Lakes Ontario and Seneca, called the "Western," and the other from the Hudson to Lake Champlain, called the "Northern Inland Lock Navigation Company." The capital stock of each to consist of 1,000 shares at $25.

Each company was afterwards allowed a capital stock of $300,000, and an increase of the same from time to time. There were 13 directors to each company elected every year. The directors to appoint collectors of tolls; the tolls not to exceed $25 per ton on the Western, and $20 on the Northern routes; the burthen of boats was registered on the bow and stern.

On the 24th of February, 1795, the Assembly voted to *subscribe* to the stock of these companies. On the 31st of March following, an act was passed, directing the Treasurer of the State to subscribe 200 shares at $50 each. Further aid was given by the State, by an act passed April 1st, 1796; and by the act of April 11, loaned the company $37,500, and took a mortgage on their property at Little Falls.

The following is a summary of an official report, made to the directors of the Western company September 1st, 1792, by a committee composed of Phillip Schulyer, Goldsborrow Banyer, and Elkanah Watson, appointed August 14, 1792.

"We proceeded on the 20th of August, by water, from Schenectady to Fort Stanwix, accompanied by surveyors and artificers, 121¾ miles, as the river runs. The depth of the Mohawk was measured in its whole extent from Schenectady, noting all the obstructions on the route; estimating the probable cost of a canal and locks at Little Falls, ¾ mile long and 39 feet fall, at £10,500; the canal at Fort Stanwix and improvement of Wood creek at £3,000, making the aggregate £39,500. We look upon Fort Stanwix, from its location at the junction of the Mohawk with Wood creek, as the future great city west of Albany."

In the spring of 1796, the western canals from Schenectady to

Seneca Falls were opened for the passage of boats of 16 tons burthen; reducing the price of transportation to $32 per ton, and $16 on returned cargoes.

This great reduction of transportation actually doubled the intrinsic value of lands and produce around our lakes.

The amount expended by the company up to December, 1804, was $367,743. This sum was subsequently swelled to $480,000, in 1813. The frequent and serious delays in navigation, by mistakes in constructing wooden and brick locks, proved a severe loss to the company. Washington made the same error in the construction of wooden locks on the Potomac. All the locks at Little Falls, German Flats and Rome rotted away in 6 years. At the two last places they were rebuilt of brick, which again failed. Under the superintendence of Mr. Weston, an English engineer, they were all rebuilt permanently of stone.

The capital stock of the company was $232,000, on which was paid to the stockholders a dividend of 3 per cent. in 1798, 3½ in 1813, 3 in 1814, 4½ in 1815, 8 in 1816, 3 in 1817, and 5½ per cent. in 1818.

$100,000 were expended on the Northern canals, which proved a total loss, and its rights were transferred to the State. Mr. Weston was employed, in 1796, in making examinations and plans for canal locks around Cohoes falls, estimating the expense at $250,000.

The toll paid the Western company for a barrel of flour passing 100 miles was 52 cents, and for a ton of goods $5.75. The total length on the whole route of artificial channel was 15 miles.

A law passed during the winter of 1798, for opening navigation between Lakes Ontario and Erie, around the falls of Niagara. The distance for canal was about seven miles, with a descent of 320 feet; the expense estimated at half a million for large boats, and double that sum for boats of 70 tons burthen. No action was taken and the law became a dead letter. The completion of the old canals in 1796, excited a lively jealousy in Pennsylvania, as appears from Geo. Mifflin's speech of that year, advising the Legislature to extend canal communications with a liberal perseverance, to retain a just proportion of the benefits from the lakes and western waters.

The Commissioners, in obedience to act of April 8, 1812, inquired the terms on which the "Western Inland Lock Navigation Company" would surrender their rights. The reply of the directors stated that they had expended $450,000, and asked of the State $190,000 for the shares held by them, exclusive of the 350 shares held by the State. Deeming their demand exorbitant, the Commissioners did not accept the terms. By an act passed June 19, 1812, commissioners were appointed to purchase all the rights and title of this company. In a report of the commissioners, dated February 17, 1816, they recommended purchasing the interests of the company. The act of April 15, 1817, empowered the commissioners to purchase their rights and interests whenever the interests of the State required, in the prosecution of the new canal. In pursuance of this act, the commissioners in their report dated January 24, 1820, estimated and appraised the damages at $151,820, to be apportioned among the stockholders of said company. This appraisement was confirmed by the judges of the supreme court, August 11, 1820, and on September 15, 1820, an agent was appointed by the directors to receive the payment which was made October 2, 1820, the individuals of the company receiving $91,616, and the people of this State becoming proprietors of $60,204 stock.

Thus on *the 20th October* 1820, *ended* the existence of the "*Western Inland Lock Navigation Company.*"

The utmost stretch of *their views* had been to *follow* and *improve* the track of *nature's channels.* They *never entertained* the conception of a *canal* by a direct route from the Hudson to Lake Erie. The conception of the "GRAND OR ERIE CANAL," belongs to Gouv. Morris, who, in conversation with Simeon De Witt, at Schenectady, in 1803, mentioned the project of *tapping* Lake Erie and leading its waters directly across the country to the Hudson; that the *object* would *justify the labor and expense, whatever that might be.*

His first suggestions were generally considered the effusions of an eccentric mind, indulging in romantic and visionary schemes.

The following is an extract from a letter written to a friend in Europe, about this time: "Hundreds of large ships will, in no distant period, bound on the billows of these inland seas. Shall I lead your astonishment up to the verge of incredulity? I will. Know then that one-tenth part of the expense borne by Britain in the last campaign, would enable ships to sail from London through the Hudson river into Lake Erie. As yet we only crawl along the outer shell of our country. The interior excels the part we inhabit, in soil, in climate, in everything. The proudest empire of Europe is but a bauble compared to what America may be—must be."

Up to 1808 nothing was done to facilitate the progress of the canals, from its first conception by Gouv. Morris. The people were appalled at the magnitude of the enterprise, and none dared approach it in *earnest*.

Men of limited views considered the undertaking too hazardous for the State to attempt single handed; but a few, possessing enlarged and vigorous minds, fanned the latent spark into a blaze.

On the 27th October, 1807, Jesse Hawley commenced a series of articles on the subject, in the "Genesee Messenger," and continued them with great ability for 14 weeks.

Mr. Joshua Forman, from Onondaga, was the *first to propose the Erie canal project in the Legislature*, by offering a resolution in the Assembly, February 4, 1808, (which was concurred in by the Senate on the 5th,) appointing a joint committee to take into consideration the propriety of exploring and causing an accurate survey to be made of the most eligible route for a canal from the tide-waters of the Hudson to Lake Erie, to the end *that Congress might be enabled to appropriate such sums* necessary to the accomplishment of that great national object. Messrs. Gold, Gilbert, Forman, German and Hogeboom, House committee, and Messrs. Taylor, Nicholas and Ward, Senate committee.

Mr. Gold, from the joint committee, submitted a report March 21st, 1808, in its favor, and offered a resolution directing the Surveyor General to cause an accurate survey to be made of a route between Hudson River and Lake Erie, together with all the natural streams adjoining. It was adopted in the Assembly, but was postponed in the Senate until April 6th, when it passed by 11 majority, 20 voting for and 9 against it. By act of April 11, 1808, $600 were appropriated to defray the expenses of the survey.

James Geddes was the first engineer appointed by the Surveyor General, Simeon De Witt, June 11, 1808. He was instructed to examine the route for a canal, from Oneida lake to Lake Ontario. Also, from Oneida lake to Oswego, by a route in part west of Oswego river; then between Lake Erie and Ontario.

EXTRACTS FROM JAMES GEDDES' REPORT, JAN. 20, 1809.

Between Oneida Lake and Lake Ontario.

Summit between Oneida lake and Salmon creek, 110 feet above Oneida lake; 344 feet of lockage: lake 124 feet above Lake Ontario. This route not deemed feasible.

Via Oneida and Oswego Rivers.

Distance from Oneida lake to Seneca river, 18 miles, and fall 12½ feet; from 3 river point to Oswego, 24 miles, and fall 111½ feet. The route on west side of Oswego river recommended and pronounced feasible.

Niagara River.

Summit between Schlosser and Lewistown, 345 feet; fall from surface to surface, 317 feet; and from lake to lake, 334 feet. The whole charge of the portage company is 75 cents per barrel for salt, and $1 for other merchandise, from Lewistown to Black Rock; Erie to Lewistown, 26 miles. "Vessels below might sail almost under the boats above, and the goods drawn on ways up, 315 feet perpendicular, by means of machinery wrought by the water power which would run through the canal."

Interior Route.

This route is proposed from Oneida lake along Oneida and Seneca rivers, up the Mud creek valley, across the country to the Genesee river, thence up Black creek to the Tonnewanta swamp, down Tonnewanta creek to Niagara river, up Niagara river to Lake Erie. Distance from Cayuga lake to Oneida lake, 62 miles; fall 34 feet. $5.25 were the prices for carrying a ton of salt from Oswego to Lewistown. Robert Fulton's estimate for a ton carried on the proposed canal, 150 miles, is $1.50 per ton. Mr. Geddes did not, with this report, submit an estimate of the cost of construction.

From the favorable view taken of the report by the Legislature, a joint resolution passed, March 13, 1810, organizing a Board of Commissioners, with powers and means to prosecute the examinations.

The Commissioners appointed under this law, and the first acting as agents of the State were, Gouverneur Morris, Stephen Van Rensselaer, De Witt Clinton, Simeon De Witt, William North, Thomas Eddy, and Peter B. Porter.

Mr. James Geddes was continued as engineer under the direction of the Commissioners.

The act of April 5, 1810, appropriated $3,000 to defray the expenses of the Commissioners.

The first report of the Commissioners, dated March 2, 1811, states: "That on the present navigation of the Mohawk river, Wood creek, Oneida lake, and Oswego river (except portage within 12 miles of Oswego); that experience has long since exploded in Europe the idea of using the beds of rivers for navigation. A preliminary point to decide is, whether by the route from the Hudson to Ontario, vessels can be taken across, of size and form to navigate Lake Ontario and Hudson river; such, for instance, as sloops and schooners of 50 or 60 tons. The Commissioners believe this to be impracticable from the want of water at the summit level." The Commissioners advised the completion of communication from the falls, 12 miles from Oswego, by railroad to the lake, to avoid the great expense of 100 feet lockage in that distance. Lake Ontario was estimated 196 feet above tide water, and Rome level 184 feet. The report was altogether unfavorable to this route, preferring the inland route direct from Lake Erie. Lake Erie was estimated to be 329 ft. above Lake Ontario. They assumed, hypothetically, that if a canal were to run in such a manner, the average descent would be six inches in every mile. They made the distance from Lake Erie to Hudson river, 310 miles; total descent, 155 feet, and actual descent, 525 feet. The difficulties suggested were: crossing Genesee river at an elevation of 26 feet; mouth of Seneca lake at an elevation of 83 feet; and the mouth of Cayuga lake at 130 feet elevation. Height at Rome, above the Mohawk, 47 feet, and at Little Falls, 80 feet; at Schoharie, 150 feet above height of ground; between Albany and Schenectady, 70 feet. They estimated the cost of bringing a ton from Lake Erie to the Hudson, at $3, a little more than one-half of what was then paid on Lake Ontario, between Lewistown and Oswego. The cheapest rate of transportation within the past ten years between Kingston and Montreal, they stated to be $1 per hundred, ascending; and 50 cents descending the river. "But the Commissioners beg leave to observe, that no supposable expense can bear an undue proportion to the value of the work. Thus, were it (by giving a loose to fancy) extended to fifty millions of dollars, even that enormous sum does not exceed half the value of what, in all human probability, and at no distant period, will annually be carried along the canal." A double set of locks was recommended. The estimated cost of the canal, from Lake Erie to the Hudson, was fixed by the Commissioners at $5,000,000. This able report was drawn by Gouv. Morris. After the reading of the foregoing report, De Witt Clinton asked leave to bring in a bill, entitled "An act to provide for the improvement of the internal navigation of the State," which upon permission was read a second time, and committed to the committee of the whole, and ordered printed, March 4, 1811.

The bill passed April 8, 1811, appointing the same Commissioners, adding Robert R. Livingston and Robert Fulton, and extending their powers to employ engineers, and appropriating $15,000 to defray the expenses of the Commissioners and engineers.

The Commissioners, under the act of April 8, 1811, made their second report to the Senate March 14, 1812, stating that they had, in obedience to the above act, made application to Congress and the Legislatures of the several States and territories for aid. Gouv. Morris and De Witt Clinton were bearers to the seat of government. Their efforts failed to receive the immediate aid which was asked. The Legislatures of Tennessee, Massachusetts and Ohio readily complied, and asked their members of Congress to vote for aid. New Jersey, Connecticut and Vermont refused, and Michigan preferred the canal from Lake Erie to Ontario. The Commissioners estimated the length of the canal at 350 miles, and the cost of transportation at $6 per ton; and on each barrel of flour 60 cents, and 80 cents to New York. The cost of carriage by land from Albany to Utica was stated at $15 per ton. Speaking of the opposition to the canal—"The Commissioners must, nevertheless, have the hardihood to brave the sneers and sarcasms of men, who, with too much pride to study, and too much wit to think, undervalue what they do not understand, and condemn what they cannot comprehend. Wise legislators will examine and reason upon facts." They estimated the revenue at $1,250,000, and the trade to tide water at 250,000 tons in 1831. They urged the immediate action of the Legislature, relying upon the credit of the State, saying that if postponed, "Will not a fertile imagination invent as good reasons for postponement then as now? The Commissioners reply with pain to arguments which imply insult. Who is there so base as not to repel the charge of selfishness? What man so cold as not to feel the dignified desire of immortalizing his name, by contributing to a monument of national magnificence, unequaled by anything on earth?"

On the 8th March, 1814, the Commissioners, under a joint resolution of the Legislature, reported the progress made. They had appointed an English engineer, whose knowledge, they believed, superior in the construction of canals and railroads; but that he had not yet arrived. They, for the first, proposed a canal from the Hudson to Lake Champlain.

The following were cessions of land made to the State as a gift for prosecuting the Erie canal, appended to the foregoing report of the Commissioners:

Paul Busti, agent for Holland Company........	100,632	acres
Le Roy Bayard and McEvers..................	2,500	do
John Greig, in behalf of Gov. Hornby..........	3,500	do

Robert Troup, agent Wm. Poulteney, will make a large grant in behalf of the heirs.

The third, fourth and fifth sections of the act of June 19, 1812, were repealed April 15, 1814.

Thus, from 1811 to 1816 nothing decisive was done, except that several leading steps were taken, such as appeals to Congress and individual States, to induce a patriotic coöperation. But these appeals proved of no avail. In 1812 a law was obtained authorizing a loan of five million dollars, which was subsequently repealed. On the 2d of February, 1816, Gov. Tompkins suggested to the Legislature the propriety of appropriating part of the revenue to construct the canal; observing, at the same time, that the Western States, which had an equal interest in the project, would, in all probability, coöperate.

Action that Induced the Erie Canal Construction Law.

At this session of the Legislature, 1816, petitions were presented to the Legislature from all parts of the State, and an able and eloquent memorial from the city of New York, from which the following is taken:

"The expense of transportation estimated on the canal at $1 a ton for 100 miles, and land conveyance $32. Hence, it follows that canals operate upon the general interests of society in the same way that machines for saving labor do in manufactures; they enable the farmer, the mechanic, and the merchant, to convey their commodities to market, and receive a return thirty times cheaper than by roads. A great chain of mountains passes through the United States, and divides them into Eastern and Western America. In various places, rivers break through those mountains, and are finally discharged into the ocean. To the west, there is a collection of inland lakes, exceeding in aggregate extent, some of the most celebrated seas of the old world. To connect these great sections by inland navigation, to unite our Mediterranean seas with the ocean, is evidently an object of the first importance to the general prosperity. If a river or natural channel, navigable 170 miles, has been productive of such signal benefits, what blessings might not be expected of it were it extended 300 miles through the most fertile country in the universe, and united with the great seas of the west." The distance from Buffalo to the ocean, by the way of New York, is 470 miles; by Montreal, 800; by New Orleans, 2,350 miles, and Chicago to the ocean, by New York, 1,200 miles; to the mouth of the Mississippi, by New Orleans, 1,600 miles; and to the mouth of the St. Lawrence, by Montreal, 1,600 miles. The distance from Detroit to the ocean, by New York, is 700 miles; by Montreal, 1,050 miles; by Cleveland, down the Muskingum, 2,400 miles. The distance from Pittsburgh to the ocean, by Le Beuf, Lake Buffalo, and New York, is 700 miles. The same to the ocean, by Buffalo and Montreal, 1,050 miles." Again: "From Buffalo to Albany a ton could be conveyed on the intended canal for $3, and from Albany to New York the present charge is $2.80. Present expense by water from the city of New York to Sandusky, $4.50 per hundred." "The whole line of the canal will exhibit boats loaded with flour, pork, beef, &c., and the other valuable productions of our country; and, also, with merchandise from all parts of the world. Great manufacturing establishments will spring up; agriculture will establish its granaries, and commerce its warehouses in all directions. Villages, towns and cities will line the banks of the canal and the shores of the Hudson from Erie to New York. The wilderness and the solitary place will become glad, and the desert will rejoice and blossom as the rose."

"It is contended on the one side that the canal should commence in the vicinity of the outlet of Lake Erie, and be carried across the country to the head waters of the Mohawk river, at Rome, from whence it should be continued along the valley of the Mohawk to the Hudson. It is on the other side, insisted that it should be cut around the cataract of Niagara; that Lake Ontario should be navigated to the mouth of the Oswego river; that the navigation of that river and Wood creek should be improved and pursued until the junction of the latter with the Mohawk at Rome. As to the expediency of a canal from Rome to the Hudson, there is no discrepance of opinion; the route from Rome to the great lakes constitutes the subject of controversy." "The most serious objection against the Ontario route is, that it would inevitably enrich the territory of a foreign power at the expense of the United States. A barrel of flour is now transported from Cayuga lake to Montreal for $1.50, and it cannot be conveyed to Albany for less than $2.50."

"The Languedoc canal, in France, connecting the Mediterranean and the Atlantic, is 180 miles long, has 114 locks and sluices, a tunnel 720 feet long, breadth of canal 144 feet, depth 6 feet; it was begun in 1666, and finished in 1681, at an expense of £540,000 sterling, or £3,000 sterling a mile."

"The Holstien canal, in Holland, begun in 1777, and finished in 1785, is 50 miles long, 100 feet wide at top, and 54 at bottom, and 10 feet deep. Ships pass through it drawing 9ft. 4in., from the German Ocean to the Baltic. From two to three thousand ships pass during a year. It cost $1,500,000, or $30,000 per mile."

"The canal from the Forth to the Clyde is 35 miles long. It rises and falls 160 feet, with 39 locks. Vessels pass drawing 8 feet, having 19 feet beam, and 73 feet length. It cost £200,000, or $23,000 per mile."

"The canals of England are 385½ miles long, and cost £2,411,900 sterling, or $28,000 per mile."

"The cost of canals in operation in this country—from Weymouth to Taunton, 26 miles long, lockage 260 feet, $1,250,000; from Brunswick to Trenton, 28 miles, lockage 100 feet, $800,000; from Christiana to Elk, 22 miles, lockage 148 feet, $750,000; from Elizabeth river to Pasquotauk, 22 miles, lockage 40 feet, $250,000. The average cost of these per mile being about $31,000."

This powerful and statesman-like document made a profound impression upon the Legislature, producing at once the law of April 17, 1816, the first incipient step leading to the prosecution of the great canal originating from Forman's resolution. The whole plan was embraced under this law. The preamble stated that "the United States, and the several States immediately interested, would contribute their full proportion to the execution of the works." From that day the prosecution of the canals proceeded with a celerity that astonished its projectors and confounded its opposers.

This law followed a report from Mr. Van Rensselaer, from a joint committee of the Senate and Assembly, March 21st, 1816, stating that the anxiety on the part of the petitioners and memorialists (amounting to several thousand) should engage the early attention of the Legislature, and that vigorous measures should be adopted for the early completion of the canal. The committee also urged the speedy opening of a route from the Hudson to Lake Champlain. Messrs. James Geddes and Benjamin Wright, the engineers, furnished facts for Mr. Van Rensselaer's report, the former having charge from Lake Erie to Cayuga marshes, and the latter from the Cayuga marshes to the Hudson river.

The canal law, passed April 17, 1816, authorized: A Board of Canal Commissioners composed of Stephen Van Rensselaer, De Witt Clinton, Samuel Young, Joseph Ellicott, and Myron Holley; (DeWitt Clinton was chosen president, and Myron Holley treas'r;) the construction of the Erie and Champlain canals; to make application to the United States for aid; to employ engineers; to open subscription books; and repealing acts of April 8th, 1811, June 19th, 1812; and appropriating $20,000.

Under this act, the Commissioners made an elaborate report, March 18th, 1817. Their first meeting was held in the city of New York, May 17th. They agreed to appoint three engineers for the Erie and one for the Champlain canal. They divided the Erie into three sections—the Western from Lake Erie to Seneca river, Middle from Seneca river to Rome, and the Eastern from Rome to Albany. A fourth engineer was appointed on the Erie, to explore the country from Buffalo to the east line of the Holland Purchase.

The first engineers appointed under the act, 1816, were:

James Geddes,	in charge of	Western	section.
Benjamin Wright,	do	Middle	do
Chas. C. Broadhead,	do	Eastern	do
William Peacock,	do	explorations Buff. to Hol. Pur.	
Lewis Gavin,	do	Champlain canal.	

The Commissioners, with two engineers, visited the Middlesex canal, to obtain practical information before proceeding with the surveys and estimates for the Erie and Champlain canals.

The dimensions of the Erie canal were fixed by the Commissioners at a meeting held at Utica, July 15th, 1817, as follows: Width of canal on bottom 28 feet, at surface 40 feet, and depth 4 feet; the locks 90 feet in length and 12 feet wide in the clear; the Champlain canal to be 20 feet wide on the bottom, 30 feet at surface and 3 feet deep; locks 75 feet long and 10 feet wide in clear. On this basis

THE FIRST ENGINEER'S ESTIMATE

of the Erie and Champlain canals was made March, 1817, as follows, viz:

Western section, by James Geddes	$1,801,862
Middle section, by Benjamin Wright	853,186
Eastern section, by Chas. C. Broadhead	2,271,690
Champlain canal, by Lewis Gavin	871,000
Total	$5,797,738

The following statements are taken from Mr. Ford's report, March, 1817, on the part of the joint committee:

"Expense of constructing the Erie canal, $5,000,000. The increase of population in New England at the rate of five per cent. the past twenty years. Transportation from Buffalo to Montreal $30 per ton, and returning $60 to $75. From New York to Buffalo $100 per ton; ordinary time of trip 20 days. The merchants of Oneida county, and counties west, pay annually for transportation, $1,000,000. Advised the organization of a board of Commissioners of a Canal Fund, to borrow $1,500,000 at 6 per cent. Annual revenue, $924,000; expenditure, $547,000. Direct United States tax upon the State, $365,620. J. R. Van Rensselaer proposed to contract for the whole work for $10,000,000 on the plan contemplated by the commissioners, or $7,500,000 and receive tolls for twenty years after one-fourth was completed."

The commissioners made application to Congress for aid, through their President, DeWitt Clinton, and to Ohio, Nov. 10th and 11th, 1816.

Wm. D. Ford, chairman of the joint committee, addressed a communication to Hon. DeWitt Clinton, March 8, 1817, asking him to plan a system of finance for a canal fund. He replied on the 10th, as follows, viz:

1. Borrow $1,500,000 on the credit of the State, by the creation of a funded debt, with interest at six per cent., principal reimbursable in twenty years.

2. The said Commissioners shall keep an account of all moneys received for the said fund, (which moneys shall be kept in the treasury,) and shall pay over, from time to time, such moneys as shall be required for the execution of the powers committed to them.

3. The said Commissioners of the fund shall, as soon as the whole or a part of the said works be completed, have power to establish and receive reasonable tolls.

4. The annual application of $60,000 of the moneys arising from auction duties, and the whole of the moneys which the State may derive from the sale of unappropriated lands, shall be pledged for the payment of said debt and the interest thereof. And they shall have power to apply any unappropriated money in the treasury to make good any deficiency or suspension in the payment of said funds.

5. The said Commissioners shall, at the opening of the next session of the Legislature, report a plan of finances for the execution of the whole of said canals, and also of a sinking fund for the extinguishment of the debt.

In this same communication it was stated that 400,000 tons of freight were carried annually on the Hudson river.

Thus DeWitt Clinton laid the foundation of our canal financial system. He estimated that ten million tons annually would be carried upon the canals; that the cost of a ton for transportation from Buffalo to Albany would be $\$3\frac{60}{100}$.

The first expense of the engineering department was submitted April 2d, 1817, and amounted to $14,462. Cessions of land from 56 persons, were obtained for the canal project, April 1st, 1817.

Total expended for explorations and surveys, up to 1817, $42,957.

COMMISSIONERS OF CANAL FUND ESTABLISHED, AND WORK AUTHORIZED TO COMMENCE; CANAL APPRAISERS APPOINTED, BY ACT PASSED APRIL 15TH, 1817.

This Law also retained the present Commissioners in office;

and the Canal Appraisers to be appointed by the Supreme Court; to borrow on the credit of the State a sum not exceeding $400,000 in any one year; tax salt 12½ cents a bushel; tax every steamboat passenger on each voyage, $1; to tax real estate within twenty-five miles of the canal $250,000; the Commissioners to contract for the labor of convicts.

The first ground was broken for the canal at Rome, July 4th, 1817. Mr. John Richardson held the plow that opened the furrow in the commencement of the Erie canal.

At this period the canal project was considered by many an untried and ruinous experiment. Fearful were the lamentations in the Legislative halls, over the miseries of an over-taxed posterity. These evil forebodings, issuing from the capital, were caught up and re-echoed by the timid and narrow minded conductors of the public press. But, to the honor of those great statesmen whose prophetic visions enabled them to look beyond the hour of error, they beheld in the future the sunshine of prosperity.

The report of the Commissioners, dated January 31, 1818, gives details of the system adopted for the construction of the canal. That they decided to complete the middle section first; that they resolved to let out the canals in short sections to contractors; extended the middle section to Utica; decided on a long summit level, and, for accuracy, directed James Geddes to run test levels, connecting the Oneida with Onondaga lakes, and from thence, after connecting with the canal, work east. This was done, and in a distance of over 100 miles only differed 1½ inches on return to Rome. Isaac Briggs was employed between Utica and Rome, as assistant; James Geddes was transferred to the Champlain canal. The first contract was dated June 27, 1817. Fifty-eight miles were put under contract during the year of 1817, wholly on the summit level. One job was completed and settled; the whole labor performed was equal to the completion of 15 miles; "3 Irishmen finished 3 rods of canal, 4 feet cutting, in 5½ days." "On the 58 miles, only one-half mile required puddling."

On the 5th of September, Mr. Geddes commenced a re-examination of the Champlain canal, and the size of canal and locks made the same as the Erie. Five miles were contracted for in October.

The act for incorporating the Chittenango Canal Company passed March 6, 1818. The canal was to be made in 5 years; that the company should be dissolved when the income from tolls should pay all their expenses and 14 per cent. interest.

The act for constructing a harbor at Buffalo, passed April 10, 1818, and for appointing an engineer for the same, at $3 per day.

The act to improve the funds, and provide for the redemption of the funded debt of the State, passed April 21, 1818. This law authorized the Comptroller to sell certain 3 per cent. U. S. stock, and to apply the proceeds to the reduction of the funded debt; the Comptroller to borrow one million dollars, at 6 per cent.; to receive sealed proposals for the same; Governor to appoint a cashier of a bank in New York to issue certificates of stock; principal irredeemable until 1823; a tax of one mill on a dollar; State deposits to be made in any bank in New York that will loan one million dollars.

EXTRACTS FROM GOVERNOR DE WITT CLINTON'S SPEECH TO THE LEGISLATURE IN 1819.

"In the course of next season, the Champlain canal, from Whitehall to Fort Edward, a distance of 23 miles, and the whole of the middle section of the Erie, from Seneca river to Utica, a distance of 94 miles, will be completed and in a navigable condition." "By the act passed April 15, 1817, the Commissioners were only empowered to make the canal between the Mohawk and Seneca rivers, and from the Hudson to Lake Champlain, and therefore it is highly expedient that a law should be passed authorizing the extension of the work. At the present time, a ton can be conveyed from Buffalo to Albany by land for $100, and to Montreal, principally by water, for $25; that when the canal is completed, a ton can be carried for $10; that the trade of the canal will equal that of the Hudson, one-half million tons a year." The following quotation from the same speech will be appreciated, as the counsel and warning of a great statesman: "A dismemberment of the Republic into separate confederacies, would necessarily produce the jealous circumspection and hostile preparations of bordering States; large standing armies would be immediately raised; unceasing and vindictive wars would follow, and a military despotism would reign triumphant on the ruins of civil liberty. A dissolution of the Union may, therefore, be considered the natural death of our free government. And to avert this awful calamity, all local prejudices and geographical distinctions should be discarded; the people should be habituated to frequent intercourse and beneficial inter-communication, and the whole Republic ought to be bound together by the golden ties of commerce and the adamantine chains of interest."

The canal was surveyed and located from the Skaneateles outlet to the Seneca river before the middle of July, 1819, and put under contract. Work commenced on the 10th of August, with from two to three thousand men, to the 10th of December. Canvass White and Nathan S. Roberts, assistant-engineers, were employed staking out work; the former ran test levels over the summit level, and aided the Commissioners in fixing the location of the line through Utica, during the year of 1819; and the latter had been employed throughout the middle section, in the year 1816. Benjamin Wright, principal engineer, was, in 1819, still employed upon the middle section, and Marshall Lewis, who had been upon the Erie, was, in 1819, transferred to the improvement of the Seneca river.

The whole amount of actual disbursements up to January 25, 1819, on the middle section was $5,875,49, one-half the estimated cost. Isaac Briggs was employed on the eastern and western sections, to explore and locate lines.

Ephraim Hart was appointed a Canal Commissioner in 1818, in place of Joseph Ellicott, resigned.

Twelve miles of the Champlain canal were completed and settled for up to December, 1818.

Iron culverts were contracted for at $89 per ton delivered; and the whole expense, when put into the work, was, for 3 ft. diameter $500, for 2 ft. $340, and for 1 ft. $170. There were 10 of 3 ft. in diameter, aggregate length 720 feet; and 6 two feet in diameter, aggregate length 321 feet, on the middle section.

The total expenditures in 1817, 1818, and up to March 11th, 1819, were $719,383, of which $147,056 had been expended on the Champlain canal.

Henry Seymour was appointed a Canal Commissioner, March 24th, 1819. On the same day the salaries of the Commissioner was fixed at $2,500. The sum authorized to be borrowed $700,000 yearly; and the assessment of a tax upon lands within twenty-five miles of the canals suspended.

On the 25th of March, the sum to be borrowed was limited to $600,000 yearly. On the 13th of April, the Legislature directed, by concurrent resolution, the survey of the Oswego river to Three River point, and the Seneca river to Onondaga lake. On April 7th, 1819, a law was passed appropriating $12,000 for building a harbor at Buffalo.

By act passed April 7th, 1819, the Commissioners were authorized to borrow a sum, not exceeding in any one year, together with the net income of the canal fund, and with the sums which they were already authorized to borrow, $600,000; also, to open the canal, and extend the same from Seneca river to Lake Erie,—between Hudson river and Fort Edward,—and between the Erie and salt works at Salina; and that there shall be only three Canal Commissioners, at $2,500 salary, after January 20th, 1820.

MIDDLE SECTION COMPLETED OCT. 22, 1819.

Water was let into the long level, and navigated with great ceremony. The middle section completed was from Utica to the Seneca river 94 miles, and the Salina side-cut 2 miles. The following is an extract from a book written in 1820, by Elkanah Watson, describing the ceremony:

"On the 22d of October, 1819, the first boat sailed on the Erie canal, from Rome to Utica. It was dragged by a single horse, trotting on the embankment, or towing-path. It was an elegant boat, constructed to carry passengers, and was called the "Chief Engineer,"—a compliment to Benjamin Wright. The president and the Board of Commissioners, attended by many respectable gentlemen and ladies, embarked the ensuing day at Utica, with a band of music, to return to Rome. The scene was extremely interesting and highly grateful. The embarkation took place amid the ringing of bells, the roaring of cannon, and the loud acclamations of thousands of exhilarated spectators, male and female, who lined the banks of the new created river. The scene was truly sublime."

The following is a copy of a letter written by an enthusiastic gentleman in Utica, to the editors of the Albany Daily Advertiser, on the same occasion, dated October 22nd, 1819:

"The last two days have presented in this village a scene of the liveliest interest; and I consider it among the privileges of my life to have been present to witness it. On Friday afternoon

I walked to the head of the grand canal, the eastern extremity of which reaches within a very short distance of the village, and, from one of the slight and airy bridges which crossed it, I had a sight that could not but exhilarate and elevate the mind. The waters were rushing in from the westward, and coming down their untried channel towards the sea. Their course, owing to the absorption of the new banks of the canal, and the distance they had to run from where the stream entered it, was much slower than I had anticipated; they continued gradually to steal along from bridge to bridge, and at first only spreading over the bed of the canal, imperceptibly rose and washed its sides with a gentle wave. It was dark before they reached the eastern extremity; but at sunrise next morning they were on a level—two feet and a half deep throughout the whole distance of thirteen miles. The interest manifested by the whole country, as this new internal river rolled its first waves through the State, cannot be described. You might see the people running across the fields, climbing on trees and fences, and crowding the bank of the canal to gaze upon the welcome sight. A boat had been prepared at Rome, and as the waters came down the canal you might mark their progress by that of this new Argo, which floated triumphantly along the Hellespont of the west, accompanied by the shouts of the peasantry, and having on her deck a military band. At nine the next morning, the bells began a merry peal, and the Commissioners in carriages, proceeded from Bagg's hotel to the place of embarkation. The Governor, accompanied by General Van Rensselaer, Rev. Mr. Stansbury of Albany, Rev. Dr. Blatchford of Lansingburgh, Judge Miller of Utica, Mr. Halley, Mr. Seymour, Judge Wright, Colonel Lansing, Mr. Childs, Mr. Clark, Mr. Bunner, and a large company of their friends embarked, at a quarter past nine, and were received with the roll of the drum, and the shouts of a large multitude of spectators. The boat which received them is built for passengers, is 61 feet in length, and 7½ feet in width, having two rising cabins, of 14 feet each, with a flat deck between them. In forty minutes the company reached Whitesboro, a distance of 2¾ miles, the boat being drawn by a single horse, which walked on the towing-path, attached to a tow rope of about sixty feet long. The horse travelled apparently with the utmost ease. The boat, though literally loaded with passengers, drew but fourteen inches water. A military band played patriotic airs.

From bridge to bridge, from village to village, the procession was saluted with cannon, and every bell, whose sound could reach the canal, swung, as with instinctive life, as it passed by. At Whitesboro, a number of ladies embarked, and heightened by their smiles a scene which wanted but this to make it complete.

Cost of the Middle Section.

The original engineer's estimate of the cost of the middle section was $1,021,[illegible]51. The actual cost was $1,125,983, an increase of a little more than ten per cent. This increase was from change of prism and structures, as stated by the Commissioners. The construction of 35 miles in the vicinity of Cayuga marshes, was greatly retarded by sickness, over 1000 laborers being disabled from this cause, between the middle of July and October. The Salina side-cut, one mile 43 chains long, cost $6,044, being only $44 above the original estimate.

Cayuga and Seneca Canal.

The first loaded boat from Schenectady, 16 tons burthen, passed the newly constructed locks at Seneca Falls, June 14, 1818. This lock navigation extended five miles, built by a company, at an expense of $60,000. The passage of this sized boat was effected through the old company's locks, while the Erie was under construction. The toll charged for passing their locks (cost equal to six miles canal) was 50 cents, 9 cents per ton a mile.

Champlain Canal.

This canal was opened for navigation November 24, 1819, from the Hudson at Fort Edward, to Lake Champlain. The original estimate for this portion was $250,000. By changing its dimensions January 31, 1818, to the same size of the Erie, the revised estimate amounted to $333,000. The actual amount expended up to February 18, 1820, was $232,268 requiring $30,000 to complete this portion, making on $260,000, a diminution of 28 per cent. Twenty-seven miles remained to be constructed from Fort Edward to the end of the Saratoga level, estimated to cost, March 18, 1817, $621,000.

The duty of 12½ cents per bushel on salt, nearly doubled the interest on moneys borrowed for the Erie and Champlain canals from 1817 to 1819 inclusive.

At a meeting of the Canal Commissioners, held at Utica, October, 1819, it was resolved to let 63 miles of the Western and 26 of the Eastern section, the latter being from Utica to Little Falls. Canvass White, engineer, was employed exploring the route between the Genesee and Seneca rivers, in 1819, assisted by Valentine Gill. David Thomas, engineer, was employed the same year in making the survey of Buffalo harbor. The Commissioners, in the report dated February 18, 1820, remarked that, "the novelty of seeing large boats drawn by horses, upon waters artificially conducted, through cultivated fields, forests and swamps, over ravines, creeks and morasses, and from one elevation to another, by means of ample, beautiful and substantial locks, has been eminently exhilarating."

OSWEGO CANAL.

Report of D. S. Bates, January 7, 1820, of his survey for the Oswego Canal. The route was from Salina to Oswego via the Seneca and Oswego rivers. He made the total fall from Onondaga lake to Lake Ontario, 118.91¾ feet, and distance 31½ miles. The estimated cost of one plan was $299,519, and of another with the canal along the banks of the river and locks inland, $212,599. This latter plan, he urged, would interfere less with the extensive fisheries on the Oswego river, an important consideration, and he advised protection to so large a class engaged in this business. He stated that 1000 barrels of eels were caught annually, with 500 barrels of other fish, at the Oswego falls, and that the income from fisheries (estimating a barrel of eels at $10) on the Oswego river was $30,000 annually. He proposed to construct the canal on the east side of the river.

David Thomas submitted his report of a survey and estimate for a harbor at Buffalo, December, 1819, estimating the cost at $4,000. An act passed March 30, 1820, authorized the Land Commissioners to set apart lots for the salt springs, to receive surrenders, &c. The steamboat tax was repealed and the "North River Steamboat Company" taxed $5,000 a year. The sum of $25,000, arising from the first sales of land, was to be appropriated to the improvement of Oswego river, and to be borrowed at six per cent.

By an act passed April 5, 1820, the Canal Commissioners' salary was changed from $2,500 to $2,000. By an act passed April 12, 1820, the Commissioners were authorized to borrow, at six per cent., $122,500, one-fourth of the same to be expended on the Champlain, and of the balance, one-half on the Western and the other on the Eastern sections.

The law for canal regulations passed April 13, 1820.

The Canal Commissioners' report, dated March 12, 1821, gives the condition of the canals at the close of the year 1820, from which the following is taken:

"The unexpected loss of water on the completed middle section, settled the question of the necessity of feeding the western section from Lake Erie. David Thomas was employed, with assistants, in locating this portion, from May to November. From Genesee river easterly, 51¼ miles were under contract, including the whole distance to Montezuma, except 9 miles; 15 locks, 20 stone culverts, 5 aqueducts and 40 road bridges. Mile boards were placed from Utica to Genesee river, the distance 96 miles.

Tolls were first levied on the *Erie canal*, *July 1st*, 1820, and the amount received in that year was $5,244, the Canal Commissioners fixing the rate. $450 for toll was collected from the old canal at Little Falls, in the same year. The Commissioners also appointed six collectors, located and paid them as follows:

First Collectors Appointed, June, 1820.

		Salary.
Stalham Williams	Utica	$200 00
Bela B. Hyde	Rome	200 00
Samuel Holladay	Canastota	150 00
Joshua Forman	Syracuse	250 00
Roderick Matson	Bucksville	200 00
Sanders Lansing	Little Falls	62 50

Engineer Department and Salaries, March 3, 1820.

			Salary.
James Geddes	Engineer		$1,500 00
Benjamin Wright	do		1,500 00
Canvass White	do		1,500 00
William Jerome	do	Expenses and per day,	4 00
David S. Bates	do	do	4 00
Andrew A. Bartow	do	do	4 00
Valentine Gill	do	do	5 00
Marshall Lewis	do	do	5 00
David Thomas	do	do	5 00
Nathan S. Roberts	do	do	4 00
Alfred Barrett	As't Eng.	do	1 00
B. H. Brown	do	do	1 50
John B. Jervis	do	do	1 25
Daniel Judson	do	do	1 75
"	do	when sick	75

Wm. McElroy	As't Eng.	Expenses and per day,	$2 00
Abraham Ogden	do	do	2 00
Hiram Tibbits	do	do	1 00
H. Wright	do	do	1 00
Holmes Hutchinson	Surveyor	do	1 50
Anthony M. Hoffman	do	do	3 00
Aaron Vedder	do	do	1 50
Geo. W. Young	do	do	1 50

The following compliment to the engineers occurs in the Canal Commissioners' Report for 1820:

" In looking back to the numerous difficulties and responsibilities, some of them of an aspect the most disheartening, which surrounded the canals, especially in their commencement, we feel compelled, by common justice, to commend the aid which has been at all times afforded by our engineers. In the selection of all the persons who are now employed by us, under this character, we have been eminently fortunate. But, to the Hon. Benjamin Wright and James Geddes, the State is mostly indebted. They were the first appointed engineers; they have unceasingly, and with improving fitness, devoted their best faculties to the great cause in which they were engaged."

The repairs of the middle section and superintendent's wages cost, in 1820, $16,718. The toll began to be received when half the transportation of the season was accomplished. The canal through, and eight miles east of Utica, was completed in the fall of 1820, Canvass White being the resident engineer on the eastern section. Seventeen miles of excavation of the Champlain canal were completed, south of Saratoga Falls, William Jerome having charge, as assistant-engineer. Boat navigation opened between Forts Edward and Miller in the fall of 1820.

The survey for lowering Jack's reef for draining Cayuga marshes, was directed by a concurrent resolution, February 16, 1821.

William C. Bouck was appointed a Canal Commissioner during the session of the Legislature, in 1821.

WATER PROOF LIME IN THIS COUNTRY

was first discovered by Canvass White, in 1818, and patented by him in 1820. He made the tour to Europe, at his own expense, for the purpose of acquiring information relative to canals. De Witt Clinton, in a letter to a committee, in 1824, stated that Mr. White had been of great use in his operations as an engineer; and that his skill, industry, and integrity, in that department, furnish strong recommendations to the favorable notice of the State." Benj. Wright stated before the same committee, "That hydraulic lime had been generally used along the canal since 1818 and part of 1819. In 1819, after much persuasion to the Commissioners by the engineers, it was used in all face work of locks and arches, the backing being laid in common lime. When common lime was used it gave evidences of soon failing. I have no hesitation in saying that the discovery of hydraulic cement by Mr. White, has been of incalculable benefit to the State, and that it is a discovery which ought, in justice, to be handsomely remunerated." Mr. Flagg reported from the same committee, "That in 1818, Mr. White, a principal engineer, made the discovery after repeated experiments, and received a patent in 1820; that he had recovered $1,700 in the United States Courts against an infringement by a contractor, and that thirty or forty contractors were liable to prosecution; that 400,000 bushels had been used from 1819 to 1824, which would subject the contractors to a loss of $16,000, if sued; that it appeared from documents that this cement was a mineral; that Mr. White introduced it at great expense, amidst the doubts and fears which operated against its use."

The Canal Commissioners stated in their report for 1820, that they had discovered water-proof lime in the progress of their exertions, in the quarries of Madison, Onondaga, Cayuga, Ontario, and Genesee counties; that it must be pulverized and mixed one-half sand to one of lime.

SINKING FUND.

By concurrent resolution of the Legislature, the Comptroller, A. McIntyre, devised a plan for a Sinking Fund for the extinguishment of the canal debt, January 12, 1821. He took, as a basis for his calculation, a debt of $5,905,456, a revenue of $210,000, and a loan not to exceed $600,000, with the revenues in one year. This extinguished the canal debt in 1842, at which time the revenue was estimated $580,000; the canal tolls, beyond repairs, at $150,000. The Comptroller then remarks that "If these estimates of revenues and of the expense of making the canals, be correct, it results that the canals will be completed in 1830, and that the canal loans will be discharged in 1843."

The act passed February 9, 1821, authorized the Commissioners to borrow, during the years 1821 and 1822, a sum not exceeding one million dollars in each year; the appointment of another Canal Commissioner; the appointment of nine appraisers, by concurrent resolutions of the Legislaturo.

The act passed March 9, 1821, authorized the Canal Commissioners to improve the navigation of the Hudson river from Waterford to Troy, and collect tolls.

The act passed April 3, 1821, fixed the salaries of acting Canal Commissioners at $2,500, in lieu of all charges and expenses, and directed that two of them should act as appraisers, repealing the law appointing nine, of February 9, 1821.

From June, 1817, to October, 1821, inclusive, $2,893,500 were borrowed for making canals, the lenders advancing to the canals $91,202 in premiums. The yearly interest amounted to $159,580.

PROGRESS OF THE CANALS IN 1821.

Western Section,

The contracts for opening a feeder from the Genesee river and the Rochester aqueduct, were signed June 6, 1821. Twenty miles of canal west of Genesee river, were let July 10, 1821, and on the 15th and 17th, 45 miles more were let, bringing the western section up to the mountain ridge, and during the season 80 miles of the western section were let, and the whole distance from Tonnewanda to Seneca river put under charge of contractors.

The line across the Cayuga marshes was staked out and located May 7, 1821, and let by contract in that month. The construction actually commenced June 15. The number of workmen engaged was from 200 to 700. Quite all the men and contractors were prostrated by sickness during August. Between Seneca and Genesee rivers the following work was completed December, 1821. Fifty miles completed and 28 navigated; 11 stone locks; 31 arched stone culverts; 2 large aqueducts; 3 waste-weirs; 45 road and 23 farm bridges.

Middle Section.

The amount of tolls collected during the season, $23,001, derived principally from the following articles: 44,723 barrels flour; 17,068 salt; 43,078 bushels of wheat; 1,061,844 feet of boards; 71,000 bushels lime; 9,993 lbs. maple sugar; 58 tons of butter and lard; 772 tons of gypsum; 2,500 tons merchandize; 47 wagons and 10 coaches, &c., at the following rates of toll for 1820 and 1821, viz:

FIRST RATES OF TOLL ESTABLISHED.

On salt per ton per mile (7 bbls. of 5 bush. each a ton)	5 mills.
Gypsum " "	5 "
Flour, meal, all grains, salted provisions, ashes, per ton per mile	1 cent.
Merchandize per ton per mile	2 "
Square and round timber per 100 cubic feet per mile	5 mills.
Boards, plank and scantling per ft. b. m. "	5 "
Shingles per 1000 per mile	1 "
Brick, sand, lime, iron, stone, per ton per mile	5 "
Rails and posts for fencing, per 1000 "	2 cents.
Wood for fuel per cord per mile	1 "
Wood for manufacturing salt	free.
Boats for transportation, per each ton capacity	1 mill.
Boats for carrying passengers, per mile of passage	5 cents.
Staves and heading for pipes, per 1000 per mile	1 "
Staves and heading for hogsh'ds " "	7 mills.
Staves and heading for barrels " "	5 "
All other articles not enumerated, per ton per mile	1 cent.

The number of boats which passed the collector's office, at Rome, was 2,731. Boats navigated, for the first time, the canal from Utica to Little Falls in the latter part of the season of 1821, making the whole length of navigable canal, from Little Falls to Seneca river, including Salina side-cut of two miles, 128 miles.

Eastern Section.

Canal completed and navigated from Utica to Little Falls in September; and the remaining portion contracted for to the Hudson, including all structures. A wooden lock was constructed at German Flats, connecting the canal with the Mohawk, thus making an uninterrupted navigation from Schenectady to Cayuga and Seneca lakes for boats of 16 tons burthen. Messrs. Wright, principal, and White, acting engineers, explored the country thoroughly from Little Falls to the Hudson, and pronounced impracticable the route from Schenectady connecting with the Hudson back of Albany, and located the line via Cohoes and Troy. The location was finally fixed upon by Messrs. Wright, Geddes and White.

Champlain Canal.

In October, the whole canal was ready for the reception of water (except a small piece of embankment at Veghten's creek) to within one mile south of Stillwater. The survey of Glens Falls feeder was made in 1821, and the route approved by Commissioners. The tolls collected the past season amounted to $1,386. The principal articles transported were, viz: 9,731,962 ft. b. m. sawed stuff; 260,399 cubic feet timber; 3½ tons Congress water; 172,500 shingles; 142,234 hogshead staves.

Samuel Young tendered his resignation as Canal Commissioner on the 16th of April, 1822, and, by request of the Senate, withdrew it on the 17th. The money spent by the Commissioners from April 15, 1817, to January, 1822, was as follows:

M. Holley	$1,799,425 58	
H. Seymour	833,335 70	
S. Young	554,641 19	
W. C. Bouck	1,589 80	
		$3,188,992 27

Progress of the Canals in 1822.

The act for lowering Onondaga lake, and draining the swamp and marsh lands in the town of Salina, and appropriating the sum of $4,500, passed Feb. 28, 1822.

Glens Falls feeder to be made navigable, the extra expense not to exceed $15,000, as authorized by an act passed April 17, 1822, which limited the speed of boats and rafts to four miles an hour.

Two hundred and twenty miles of the Erie canal were completed and navigated in the fall of 1822. In June, of 1822, the rock-cutting through the mountain ridge was assumed and performed by the State; two miles of the worst portion containing 260,000 cubic yards; the earth on top being over twelve feet cutting and 94,400 cubic yards earth excavation.

On the 1st of July following, the Genesee river feeder was completed and the canal filled from it, from Rochester to Pittsford, and navigated the remaining portion of the season.

On the 14th of October, the water was passed in the canal, over the Irondequoit embankment, seventy feet high, which supply from the Genesee river, produced at once active navigation from Rochester to Little Falls, before rendered useless for want of water—Mud creek being the only feeder for the distance between Pittsford and Seneca river. Not being able to complete the canal across Cayuga marshes, a wooden lock connected it with the Seneca river, so that in May, 1822, toll began to be collected upon the western section. From the incompleteness of this section, the Canal Commissioners decided in June to charge only half the usual rates of toll west of Montezuma. The amount of toll thus collected at Lyons, Palmyra and Rochester, during the season, was $3,286. The canal was so far completed across the Cayuga marshes that boats passed July 30, 1822. The middle section was navigable from April to December, including the eastern section from Utica to Little Falls.

Business of the Canals in 1822.

Tons passed on Erie canal, at Rome, 35,444.

Tolls collected	from Little Falls to Montezuma	$57,160 89
do	on western section..................	3,286 00
do	on Champlain canal................	3,625 44
		$64,072 33

The repairs, superintendence, etc., of middle section cost $8,000.

On the 15th of November, 1822, water was let into the canal, and navigated by boats drawing one and a half to two feet of water, from Little Falls to the flats of Schenectady. There were completed 13 locks, 11 guard locks, 60 culverts, 13 aqueducts, 105 road and farm bridges, and 6 crib dams.

During the fall of 1822, the Champlain canal, together with locks, aqueducts and culverts, were completed and navigated with loaded boats from Lake Champlain to Waterford. Canvass White, engineer, was sent early in the spring of 1822 to lay out the Glens Falls feeder. During the short time navigation was open on this canal, the tolls were $3,625 44 in the season of 1822. The chief articles were 444,058 feet round and square timber, 15,047,681 feet b. m., 854,000 shingles, 20,000 staves, 8,000 hoop poles, 82 tons of merchandise, 8 tons of meal, 33 tons of marble, 30 barrels of whisky, and 1,800 cwt. paint.

Condition of Canal Expenditures and Work,.

The whole amount of canal expenditures..........		$5,603,386
Estimated cost to complete Eastern section Erie canal...........................	$600,000	
Estimated cost to complete Western section, Rochester to Mountain Ridge..........	400,000	
Estimated cost to complete Western section, Mountain Ridge and locks............	750,000	

Estimated cost to complete Western section, Tonnawanda creek to the lake, including Tonnawanda and Oak Orchard feeder	$250,000	
		$2,000,000
Total cost for constructing and completing Erie and Champlain canals		$7,603,386

This exceeded the original estimated cost, (March 18, 1817,) $1,850,648, accounted for as follows: There was a mistake of 8 miles in the length of canal between Schoharie and Albany, estimated to cost $136,000, and for a descent of 17 feet, (expense of lockage,) $21,250; damages paid for claims of individuals, $100,000; increasing size of embankments, $150,000; changing wooden to stone structures, $100,000; changing Champlain canal to same size of Erie, $290,000; changing the line through the mountain ridge, $200,000; additional feeders, $150,000; opening connection with Salina side-cut and Onondaga lake, $40,000; improving Hudson river, Troy to Waterford, $70,000; interest on canal debt $446,634; to Western Inland Lock Navigation company, $152,718; incidental expenses of Commissioners, $5,254.

By the use of the canal west of Seneca river, the Commissioners, in this report, dated February, 1823, estimated that the market price of wheat had increased 50 per cent.

The following statement shows the collection of tolls upon the Erie and Champlain canals for the season of 1822.

NAMES OF COLLECTORS.	Office.	Amount collected.	Salary collect's	Incidental exp's	Amount of bail.
David S. Bates	Rochester	$271 06¼	$40 00	$30 33	$2,500 00
Seymour Scovell	Palmyra	1,726 47¼	200 00	82 40	2,500 00
John Adams	Lyons	1,288 97¼	200 00	33 40	2,500 00
Roderick Matson	Mentz	21,804 53	500 00	26 75	2,500 00
Joshua Forman	Syracuse	5,333 34	350 00	....	2,500 00
B. B. Hyde	Rome	2,756 71	500 00	....	2,500 00
Stalham Williams	Utica	23,650 79	500 00	60 62	2,500 00
Sanders Lansing	Little Falls	3,615 06	350 00	....	2,500 00
Samuel Lawrence	Whitehall	2,632 00	200 00	....	....
Samuel Hastings	Fort Ann	720 04	200 00	....	....
Peter McIntyre	Fort Edward	100 15	200 00	....	....
S. F. Shepherd	Fort Miller	173 25	200 00	....	....
		$64,072 38			

The collectors' offices were established October 20th. But half the usual rate of toll was charged west of the Seneca river, in consequence of the deficiency of water before completion of Irondequoit embankment.

Canvass White, Engineer, planned and directed the building of the lock and dam between Troy and Waterford, until the 8th of June, when Wm. Jerome took charge. There was a great difference of opinion among the engineers and Commissioners as to the expediency of extending the navigation of the river above Troy.

PROGRESS OF THE CANALS IN 1823.

The Commissioners of the Canal Fund were empowered by an act passed March 29th, 1823, to borrow, during the year $1,300,000, and $120,000 to pay the interest of the canal stock.

The construction of a basin at Albany at the termination of the Erie and Champlain canal, was authorized by an act passed April 5th, 1823, "To construct a sloop lock, and charge toll for the same."

The act for the relief of owners of hydraulic privileges, in cases where dams are erected by Canal Commissioners, passed April 5th, 1823.

By an act passed April 22d, 1823, the Canal Commissioners were authorized to make a survey from the head of Oswego Falls to Lake Ontario, and to furnish an estimate of the cost of completing the Oswego canal, and changing the canal through Rome.

By an act passed April 24th, 1823, the salaries of the Canal Commissioners were fixed at $2,000.

Champlain Canal.

The Champlain canal was completed from Lake Champlain to Albany, September 10th, 1823, and passed loaded boats; and on the 8th October the first boats passed from the west and north through the junction canal, into the tide waters at Albany. The tolls on rafts were double the same carried in boats. There were only 10 boats on this canal in 1821, and 100 in 1823. Water was passed in the new Glens Falls feeder to Sandy Hill. The amount of tolls received was $26,966.87. Over 4,000 tons passed north to Lake Champlain; and 1,180,000 cubic feet timber, 22,426,067 feet b. m., 41,314 bushels of wheat passed south, together with about 1,200 tons merchandise. Numerous petitions were presented for the construction of a canal in lieu of river navigation between Forts Edward and Miller, estimated to cost $350,000.

Erie Canal.

Two hundred and eighty miles navigated Oct. 1. The canal between Lockport and Rochester not finished. From Rochester to Brockport the canal was completed and filled Oct. 10. The tolls collected on the same amounted to $141. From Brockport to Lake Erie, 26 miles, not completed; the estimated cost to finish this portion was $928,000. The Rochester aqueduct completed, 802 feet long, with 11 arches, 9 of them 50 feet span, 50,000 barrels of lime used. Canal completed from Salina to Seneca river. Articles that passed collector's office, at Rome, during the season, 35,037 tons.

Tolls collected	between	Genesee and Seneca rivers	$20,954 41
do	do	Seneca river and Utica	77,593 26
do	do	Little Falls and Albany	27,444 09
Total			$125,991 76

In May, the canal was extended 22 miles, to Spraker's from Little Falls. The St. Johnsville feeder was finished in September. The canal, between Schenectady and Albany, was completed, embracing 29 locks, and water let in October 1, thousands celebrating the event. From 30 to 40 boats passed the junction lock in 24 hours. The whole expense estimated to fully complete the Erie and Champlain canals, $1,128,000.

Expenditures of Canal Commissioners from April 15, 1817, *to February*, 1824.

Expenses up to and	including	1821	$2,004,523 53
do	do	1822	1,184,468 73
do	do	1823	1,941,962 37
do	do	1824	1,785,447 84
Grand total expended by Commissioners			$6,916,402 47

David Thomas was principal engineer on the Western, and Benj. Wright on the Eastern sections of the Erie canal; Wm. Jerome on the Champlain canal. Porteous R. Root was rodman at $12 per month, and John B. Jarvis, Henry Wright and De Witt Clinton, jun., assistant engineers, at $3 per day.

Progress of the Canals in 1824.

Mr. Holley, Canal Commissioner, resigned in April.

On the 12th of April, 1824, Mr. Bowman offered a resolution, in the Senate, to remove De Witt Clinton from the office of Canal Commissioner. It was carried by 18 majority in the Senate, and 30 in the Assembly.

Messrs. Holley, Young, Seymour and Bouck were the only Commissioners to whom public moneys were advanced.

The act passed April 5, 1824, authorized the Canal Commissioners to survey the Seneca river from Jack's reef to Cayuga lake, with a view to reclaim the Cayuga marshes, and improve the navigation of the river, &c.

An act was passed April 10, 1824, authorizing a survey for a canal from the foot of sloop navigation in the St. Lawrence river to Lake Champlain, and appropriating $1,500.

April 12, 1824, an act was passed for selling Grand Island in Niagara river, together with all islands between that and the shore.

An act, authorizing the Commissioners to borrow one million to complete the canals, passed April 12, 1824.

In the season of 1824, 10,000 boats passed the junction of the Erie and Champlain, with a speed of 55 miles in 24 hours, and with passenger boats 100 miles; 3,000 houses were built in the city of New York in 1824, from the impetus given by canals.

Water was let into the canal between Brockport and Lockport on the 8th of September, and on the 25th loaded boats passed, thus making uninterrupted navigation from Brockport to Albany. Between Utica and Albany there were 300 bridges.

Three hydrostatic locks were constructed at Troy, Utica and Syracuse. The tonnage of boats was obtained by measuring in a pond the displaced water that had been previously gauged in the lock.

A boat with 30 tons of merchandise navigating 200 miles of the canal, paid $184, and passenger boat $12. The tolls upon the Erie were $294,546.62 for the season, and on the Champlain canal, $46.214, 45, making a total of $340,761.07. The freight of the Champlain for the season, 1824, was 28,994 tons, and of the Erie canal 157,446 tons. The number of boats that passed daily below the junction averaged 40, between junction and Utica 24, and between Utica and Rochester 16. The following statement shows the additional distance added each year to the Erie canal; also, the tolls on same, viz:

In 1820,	tolls on	94	miles	$5,437 34
1821,	do	94	do	23,000 00
1822,	do	116	do	57,160 39
1823,	do	160	do	105,037 35
1824,	do	280	do	294,546 62

The debt which had been incurred, including the amount required to complete the canals, and pay damages, at the close of the year 1824, was $7,700,000.

Of the tolls collected 18/20 were paid by citizens of this State.

It was assumed by the Commissioners that the tolls would reach two million in 1836, and four million in 1846.

The capacity of boats in 1824 was from 35 to 45 tons. The tonnage going to tide water was five times greater than that coming from it.

The Commissioners of the Canal Fund calculated, in 1825, that the debt of that year, together with the sum necessary to be borrowed to complete the canals, ($225,965) would, on the 1st January, 1826, amount to $7,693,736, and that by the application of the yearly income, averaging, (after paying expenses of collection, repairs, &c.,) one million and twenty thousand dollars, the said debt would be extinguished in less than 10 years.

The following value and areas of the islands in Niagara river were fixed by the Surveyor General, in January, 1825, viz:

Grand island,	17,381¼	acres at	$48,422 73
Small islands,	502½	acres at	1,542 25
Totals....	17,883¾		$49,964 98

The act for the Governor to nominate and Senate to appoint two Canal Appraisers, passed April 20, 1825.

Grand total' expenditures by the Canal Commissioners from 1817 to 1824, both inclusive, for the construction of the canals:

1817 to and including 1821	$2,004,523 53½
1822	1,184,468 73½
1823	1,941,962 37
1824	1,785,447 84
February 1st, 1825	1,356,720 18
	$8,273,122 66

PROGRESS OF THE CANALS IN 1825.

Erie canal completed October 26th, and water admitted into the canal at Black Rock from Lake Erie. On this day the first boat ascended the Lockport locks, passed through the mountain ridge into Lake Erie, thus making an uninterrupted navigation to the Atlantic, for boats of from 35 to 45 tons burthen. The opening ceremonies were celebrated with unbounded joy and enthusiasm; cannon, music, and all the festivities that a great national success could invent, were displayed to glorify the occasion. Medals were struck, and sketches of canal scenes imprinted upon earthen wares, to commemorate the event.

To De Witt Clinton's perseverance and efforts, in his official capacity as Governor and president of the Board of Commissioners from 1817 to its completion, not only the commencement and the vigorous prosecutions of the canals are to be ascribed, but also the plan of finance by which they had been advanced to completion.

The following extracts from the daily papers, recording the event, will be read with great interest, as it serves to convey more impressively the high esteem in which the projectors of the canal policy were held at that time by the people.

(From the Buffalo Journal Extra of October 27.)

CANAL CELEBRATION, BUFFALO, OCTOBER 26, 1825.

Yesterday being the day fixed upon for the first opening of the whole line of the Erie canal, our village at an early hour was thronged by the yeomanry of the county, who, alive to the subject, had assembled in vast numbers to witness the attendant ceremonies of starting the first boat.

* * * * *

CELEBRATION ODE.

Strike the lyre! with joyous note,
Let the sound through azure float,
The task is o'er, the work complete,
And Erie's waves with ocean meet;
Bearing afar the rich bequest,
While smiling commerce greets the west.
See where the peaceful waters glide,
Through woodlands wild, as if in pride,
To mark that learning makes her home
Where solidude has set her throne.
Strike the lyre! 'tis envy's knell—
Pallid fear within her cell
Shrinks aghast—while truth and fame
On glory's scroll 'grave Clinton's name.

* * * * * *

Strike the lyre! 'tis freedom's song,
While th' red flash, the line along,
Tells to the world with echoing roar,
Matter and space are triumphed o'er!
Gigantic genius led the van
While sturdy toil fulfill'd the plan.
What boundless gratitude is due
To those, whose purpose, ever true,

Pursued their course with daring pride
Till Erie's waves caress'd the tide.
Strike the lyre! should discord's brand
In vain be hurl'd by impious hand,
New York can proudly boast alone
She wove the band—the Union's zone.

Toasts given at the Eagle Tavern.

The completion of the Erie canal—a memorable era in the annals of our State.

The State of New York—she has added another wonder to the world; her posterity, in the full fruition of its blessings, will guard with grateful recollections the rich bequest of their fathers.

De Witt Clinton—the completion of the Erie is the best commentary on his judgment; while contemplating its usefulness, posterity will never fail to associate the name of its projector.

Toasts drank at the Mansion House.

The Erie canal—it is the work of freemen.

The State of New York—the pioneer of internal improvements.

De Witt Clinton—the adamantine hills sunk down at his approach, and distant oceans are united by his presence.

The Canal Commissioners, engineers, and workmen of the Erie canal—well done, good and faithful servants.

(From the Albany Daily Advertiser, November 2, 1825.)

Grand Entre.

The first boats from Buffalo will make a grand entre to the city this day, at about 10 A. M., as is expected, and will be greeted by the roar of cannon and acclamations of thousands who never expected to live to see our canal completed.

(From the Albany Daily Advertiser, November 4, 1825.)

Canal Celebration at Albany.

Wednesday last was a proud day for the citizens of Albany—a great day to the citizens of the State of New York, and an important day to the Union; for then we had ocular demonstration that the great work of the age is completed, and our inland seas made accessible from the ocean. The auspicious event was commemorated in a style worthy of freemen, feeling thankful for the blessings which a beneficent Providence had bestowed upon them in such abundance.

At 10 o'clock the "Seneca Chief," with the Governor, Lieut. Governor, the Buffalo, Western, and New York committees on board, came down in fine style, and the thunder of cannon proclaimed that the work was done, and the assembled multitude made the welkin ring with shouts of gladness. It was not a monarch which they hailed; but it was the majesty of genius, supported by a free people, that rode in triumph and commanded the admiration of men stout of heart and firm of purpose.

Mr. William James, chairman of the committee of the citizens of Albany, delivered an address, which, for sound sense, strong ideas, and a clear and lucid exposition of the advantages that will result from the completion of our great works of internal improvement, is worthy of high commendation.

Extracts.

The project was grand and sublime. The difficulties appeared so formidable to many of our best men as to impress a belief of its utter impracticability. The estimates of cost made by its advocates were not more than five per cent. on the calculations of many of its opposers, who affirmed that the United States could not accomplish the work in twenty years. The parties for and against the commencement of the work were distinctly identified and well known; all appeared to act from duty and honest convictions. The talents of the State were brought under contribution in the controversy. The influence of patronage and power in high places, united with a host distinguished for their talents and respectability, was brought against the measure. They were met by the intrepid reasonings and persevering ardor of powerful advocates, who adhered to their first calculations, and enlightened and convinced the people by clear and lucid expositions, reports, and memorials on the subject, which identified a leading individual, who for years had been known as the author of luminous appeals, and addresses to the people of this State, on subjects of improvement in agriculture, manufactures, and commerce, and to have early embarked his reputation and influence, with ardor and power of highly gifted and scientific mind on the canal project. Considered by friends and foes to the measure to be a center to its advocates, he was peculiarly subject to the sarcasm and virulence of the opposition, who stigmatized the estimates and calculations as absurd, their data fallacious, and the motive and object of the persevering and influential promoter to be sinister and base. He was charged by the opposition with all the evils and profligate waste of public expenditures, and with the disgrace of anticipated failure. To hazard a reputation, so exalted by talent as to reflect credit on the nation, and a character which had been so long and so closely interwoven with the prosperity and dignity of the State, to such awful denunciations, required a mind not only conscious of its own strength and integrity, but of that decision and firmness which eminently distinguished De Witt Clinton. He had been fortunate in associates, by whose exertions and influence the law was passed; and under a system of finance which he proposed, and the intelligence and liberality of subsequent Legislatures, the great work has advanced to completion, giving to the world a practicable example of the proverb, "There is that that scattereth, yet increaseth." * * * * *

Every section of the canal will present to the philanthropist scenes creating sources of wonder and delight, exhibiting the power of mind over matter, and evidencing this country's greatness. He will indulge the pleasing expectation that a bold, hardy, and enterprising population will extend the empire of the Republic, disperse "the shades of the wilderness," and plant monuments of civilization and refinement around the great waters of Michigan, Huron, and Superior. * * * *

It might be consistent with the occasion, that we should review the striking and particular causes of our advancement in power and wealth, and also contrast the intelligence, liberality, and energy exhibited by the Republic, in this great work, with that of other nations. Such a course is due, and would reflect merited praise on our scientific engineers, who have laid out the courses, directed the levels and all the works; and also the Commissioners and agents who have had charge and superintendence of their execution. * * * * * * * *

The cost and expenditure of the canal are indeed trifling when compared with the millions lavished on ostentatious ambition of monarchs and their favorites, and the labor is incomparably less than that bestowed upon the construction of pyramids, erected by the slaves of superstition for mausoleums to contain the dust or sarcophagi of their tyrants. * * * * * *

TOASTS DRANK UPON THE OCCASION.

Internal improvements—the true sources of national glory and happiness.

Canals—The surest guards against the calamities of war. They constitute the strong ligaments that bind us together in united energy and strength.

By Governor Clinton—The love of country. May it ever rise superior to the spirit of party and personal consideration.

By Lieut. Governor Tallmadge—Hail! to the waters of the Erie, which have this day come to greet the Hudson. They have been brought by the resources and enterprise of a single State, through rock and over hills. May they never be burthened with a tonnage duty to the United States.

* * * * * * * * * * * *

Thursday morning, at ten o'clock, all the steamboats and canal boats from Lake Erie took their departure for New York.

Finances of the State.

On the first January, 1825, the finances of the State stood as follows:

Canal debt ($4,524,270 at 5 per cent. and $2,943,500 at 6 per cent.)	$7,467,770 00
Canals cost (adding $494,773 tolls and W. J. L. N. canal)	9,323,789 00
Estimated amount to complete, including claims and damages	800,000 00
Revenue of Canal Fund, for 11 months	592,497 00
Of which there is included for canal tolls	289,320 00
Estimated revenue of Canal Fund for 1825	717,500 00
Annual interest on canal debt	402,823 00
Whole amount tolls received from commencement to 1825	494,733 00
Annual surplus to be applied to canal debt	610,000 00
Total expenditures by Canal Commissioners from 1817 to 1825	8,273,122 00

Staetment of Canal expenditures in detail from April 15, 1817, *to* 1824, *inclusive.*

Engineer department	$247,644 71
Superintendent of repairs and work	118,194 27
Collectors of tolls and assistants	23,331 00
Canal Commissioners' salaries, traveling, &c	70,531 67
Agents	45,772 53
Appraisers	3,427 18
Lock tending	5,782 00
Damages paid to individuals	80,170 69

Building fences, removing buildings and fences, use of lands	$68,997 48
Repairs of canals	140,322 04
Miscellaneous expenses other than for construction	18,149 00
Total	$822,322 57

For construction proper—Canals.

Section work	$5,448,345 09
Mechanical work	1,892,208 00
Feeders	101,647 00
1 hydrostatic lock	8.600 00
Total expended on canal from Apr. 15, 1817, to Feb. 16, 1825	$8,273,122 66
Total expended by the Commissioners for the year	1,101,250 48
Total expended on Erie and Champlain, Jan. 1, 1826	$9,474,373 14

ACTUAL COST PROPER OF ERIE AND CHAMPLAIN CANALS.

The Commissioners of the Canal Fund stated, that from $9,474,373 should be deducted $1,621,274 for pay of engineers, Commissioners, feeders, damages, repairs, Black Rock harbor, lowering Onondaga outlet, Salina and Onondaga side-cut and locks, Waterford and Troy side-cuts, locks and dams, and channel in river, Glen's Falls feeder, making the actual construction cost $7,853,099 equal to 18,136 per mile, the aggregate length being 433 miles.

The admission of water into the canal at Black Rock, Oct 26, gave a depth of from 5½ to 6 feet, above bottom, from Buffalo to Lockport, as originally located by David Thomas.

The water was drawn eastward by a declivity of one inch to a mile. The Lockport locks overcome an ascent of 60 feet.

Collectors were first appointed at Buffalo Oct. 1. The tolls collected on the Erie for the season were $492,664, and on the Champlain $73,557.

Whole number of tons to tide water	185,405
do do from do	33,669
do passengers	40,000

Cayuga and Seneca, and Oswego Canals.

The construction of the Cayuga and Seneca, and Oswego canals was authorized by the act of April 20, 1825, which appropriated $150,000 for the former, and $227,000 for the latter. The survey and estimate for the former were made by David Thomas, and for the latter by Holmes Hutchinson. Both were put under contract in June and July. The act of April 20 is known as the great canal bill that authorized the surveying and estimating of 21 canal routes, embracing an aggregate length of over 1,700 miles, and appropriating therefor $12,500; 900 miles were surveyed during the year. The Chenango, Genesee Valley, Black River and Chemung canals were included in this law.

The Canal Commissioners reported to the Senate, under a call, that, in consequence of the completion of the Erie and Champlain canals, the services of the following engineers could be dispensed with:

James Geddes, principal engineer.
Nathan S. Roberts, principal engineer.
David S. Bates, do
Holmes Hutchinson, resident engineer.
Porteous R. Root, assistant engineer and superintendent.
Charles T. Whippo, do do
Jno. T. Clark, inspector and weigh master.

Mr. Allen from the committee on canals, reported in favor of the construction of the Chenango and Chemung canals. The former was estimated to cost, including damages to hydraulic power, $742,478, and the estimate of the probable revenue per year at $51,800. From Utica to Binghamton its length was 90 miles.

The Chemung canal, from Seneca lake to Newtown, (Elmira,) was estimated to cost $240,000, including a navigable feeder. Length of canal and feeder thirty-one miles, and the estimate of probable revenue $20,757 per year.

Progress of the Canals in 1826.

During the year the construction progressed upon the Oswego, the Cayuga and Seneca canals, the Glen's Falls feeder, and the Champlain from Fort Edward to Saratoga.

Oswego Canal.

Three large dams were built across the Oswego river, with several locks and the completion of river improvement from Onondaga lake to "Three River Point." The distance from Salina to Oswego 38 miles, with a fall of 123 feet. Total estimated cost at contract prices, in 1826, $437,000. Mr. Weston pronounced the construction of this canal as presenting "obstacles almost insurmountable," and altogether deemed it impracticable. The Cayuga and Seneca canal was all put under contract, except that portion from Waterloo to the Lake.

Erie and Champlain.

Of the Erie canal about 250 miles were protected by stone and timber, at an expense of $800 per mile—the completion of Limestone creek feeder, and feeder at Rome,—rebuilding eighty bridges. The canal from Fort Edward to Fort Miller substituted for river navigation, estimated to cost $170,000, nearly completed.

Rates of Toll.

The Inland Lock Company charged in 1814 for passing locks at Little Falls, German Flats and Rome, $5.75 to $5.90 per ton.
Rates on turnpikes in 1826 was 1½ cents per ton per mile.
do do Erie canal in 1826 do 5 mills do do
do to pass Cayuga bridge 30 cents do do
do Erie canal, one barrel flour on 100 miles was, in 1826, 12c.
do do do do bushel wheat do do do do 3c.

Engineers.

David Thomas, engineer in charge of the Cayuga and Seneca, and William Jerome the Oswego canals.

Canal Board created by Act, passed April 18th, 1826.

Black River Canal.

Mr. Dagan presented petitions for the construction of the Black River canal, Feb. 3d, 1827.

Progress of the Canals in 1827.

At Fort Plain a new lift lock was completed. The dam at the head of Genesee river feeder, was raised fourteen inches. The canal from Fort Edward to Fort Miller was completed and in use. The Oswego canal unfinished from great sickness among the laborers. Almost the whole of the Cayuga and Seneca canal was re-let May 10th.

The tolls collected on the Erie canal during the season, were $786,244.64, and on the Champlain canal, $72,833.84, leaving an excess, above all expenditures for maintenance, of $271,448.27. The Canal Commissioners met January 7, and organized under the new law, passed the last winter, reducing the acting Commissioners to two.

During the session of the Legislature, petitions were presented for the construction of the Chenango, Chemung, Black River, Genesee Valley, Crooked Lake, and Cayuga Lake Inlet canals, also for the Oneida Lake canal.

There were one hundred and twelve lock tenders on the Erie and Champlain—pay, $20 per month.

PROGRESS OF THE CANALS IN 1828.

Oswego Canal

Was completed and navigation opened December 10th. This canal was to have been completed in July, but extraordinary sickness and floods delayed.

One half the canal consisted of artificial channels, and the other was slack water navigation, Holmes Hutchinson's original plan having been changed to locks and dams. The structures consisted of 22 bridges, 7 culverts, 1 aqueduct, 2 waste weirs, 8 dams and 14 stone locks. Cost of construction, $\$525{,}115\frac{87}{100}$.

Cayuga and Seneca Canal

Was completed and navigation opened November 15th, from Seneca lake to Montezuma, and collection of tolls commenced. It had 11 locks—83½ feet lockage. Cost of construction, $\$160{,}396\frac{78}{100}$, which, together with $\$53{,}603\frac{53}{100}$ paid the Seneca Lock Navigation Company, made the actual cost $\$214{,}000\frac{31}{100}$—$7,500 per mile—which greatly exceeded David Thomas estimate in 1825, at $150,000. The locks were all built of wood. The Cayuga inlet was re-surveyed and put under contract in May.

Black River Canal.

Alfred Conger made a survey and estimate of this canal, for a company, Nov. 20, 1828, estimating the cost at $433,571. Its length was assumed to be 20½ miles, 10 of which were artificial, and 10½ natural channels. The structures were 11 locks, (73½ feet lockage), 19 bridges, 2,710 lineal feet towing-path and bridges, 5 safety gates, 5 dams, 6 culverts, 17 miles fence, 3 lock houses and 1 collector's office.

Erie and Champlain Canal.

Two new weigh locks were built in the place of the old hydrostatic locks at Syracuse and Troy. Three locks were built at Fort Ann, taking the place of old ones built of quick lime, before the discovery of water lime, in 1818, by Canvass White, and by the Canal Commissioners, in the quarries, in 1820.

Total expenditures by the Commissioners during the year	$1,002,287
Total revenues from all sources from canals	1,233,435
Including for tolls	838,412
Number of tons arriving at tide water	181,604
do departing from tide water	32,506
do boats arriving and departing from Albany	14,478
Whole number of tons carried	214,110

Chenango Canal.

Surveyed and estimated by Nathan S. Roberts and Holmes Hutchinson, Sept. 17 and Jan. 22, 1838, at the expense, and under the direction of, petitioners. Mr. Roberts reported the supply of water, and Mr. Hutchinson the construction—estimated to cost $944,775. The estimated revenue by the canal committee was $173,640. Mr. Hutchinson made the length $92\frac{3}{4}$ miles; summit level 706 feet above the Erie, and 303 above the Susquehannah; size the same as the Erie.

PROGRESS OF THE CANALS IN 1829.

It was found that wooden structures required to be renewed every eight or ten years. Weigh lock at Utica completed. Canal across Cayuga marshes was deepened, caused by improvement in Seneca river, at "Jack's reef." Cayuga inlet canal completed Sept. 1st.

Total expended for repairs on the		Erie	$175,405
do	do	Champlain	55,958
do	do	Oswego	12,871
do	do	Cayuga and Seneca	8,038
Total amount of tolls collected on above canals			861,302

Construction Chenango canal authorized by act of March 24, 1829, of the same size of the Erie canal; the locks on Holmes Hutchinson's plan. This law also authorized a re-survey, and David S. Bates was selected by the Commissioners, who submitted his report, January, 1830. He estimated the cost at $992,307.

Chemung and Crooked Lake Canals.

Surveys and estimates of Chemung and Crooked Lake canals were submitted by Holmes Hutchinson, Nov. 12, 1829. He made the Chemung $22\frac{1}{2}$ miles long; summit level 441 feet above Seneca lake, and 47 above Chemung river, and its estimated cost $179,004, and the feeder, $112,536, making both together, with contingencies, $331,125; and the Crooked Lake canal, eight miles long, 27 locks, 270 feet lockage, at $119,198. Both were authorized to be constructed, the Chemung by act of April 15, 1829, appropriating $300,000, and the Crooked lake by act of April 11, 1829, appropriating $120,000, with composite locks, and both the same size of the Erie canal; the Chemung locks to be of wood, one lock being estimated by Holmes Hutchinson to cost $1,617.

David Thomas was designated by law to superintend the improvement of Seneca river for draining the Cayuga marshes. The channel at Jack's reef was stated by Commissioners to have lowered Cross lake 5 feet, at Mosquito Point 4 feet, at Bluff Point 3 feet, and at Montezuma 2 feet. Whole expenditures for this purpose $98,371.

January 26, 1830, O. W. Childs submitted his report for lowering Oneida lake, and improving the river for navigation. He made the length of Oneida river $19\frac{1}{4}$ miles, and its fall $9\frac{60}{100}$ feet. He estimated the cost of the improvement for canal navigation at $86,398, and for steamboat at $59,923. He calculated that a channel 100 feet wide, and 4 feet cut, would lower the lake from 15 to 21 inches. The above work was authorized April 30, 1829, and provided for a re-survey.

May 4, 1829, the lowering of Seneca lake was authorized to the level with the outlet, one-half mile from the lake—the reduction of the bottom of canal, from the outlet to Geneva, to correspond. The inlet at the head of the lake was to be deepened 18 inches, and the width at bottom to be 60 feet.

Col. De Witt Clinton, Jr. was the engineer in charge of the survey of the Susquehannah and Chemung rivers, and of the connection of Otsego lake with the Erie canal, by canal or railroad. He submitted a very able and scientific report on the same, January 27, 1830.

PROGRESS OF THE CANALS IN 1830.

Total amount tolls collected on all the canals..	$1,056,799 00
Total amount expended for repairs.............	229,850 00
There were 80 levels on the Erie canal; number of locks, 84.	
Total number of boats arriving at and departing from Albany, 12,890.	

Total expenditure by Canal Commissioners from 1817	$10,606,514 48
Total expenditure by superintendents from February, 1826	1,124,558 84
Chemung canal put under contract in April, to be completed the following October. Estimated cost at contract price	291,831 00
Crooked Lake canal put under contract. Estimated cost at contract price	95,820 00

The amount of property sent to and from the country west of this State increased 100 per cent. during the year.

H. S. Sargent submitted his report for improving Chemung and Susquehannah rivers, March 17, 1831.

The Legislature was petitioned January 19, 1831, for an act to incorporate the Oneida Lake Canal Company. The canal was estimated to cost $30,000. It was stated that land had depreciated one-half in value since the diversion of trade to the Erie canal. Fifty-one feet lockage, and length of canal three miles.

Survey and Estimate Black River Canal.

February 28, 1831, Holmes Hutchinson, in answer to a resolution, November 24, 1829, submitted his report of the survey and estimate of the Black River canal, and argued the practicability of using inclined planes instead of locks. From this report the following is taken: The whole rise and fall from Rome to the Black river 1,078 feet; 10 inclined planes to be constructed to overcome 685 feet, and 39 combined locks for remaining elevations. Length from Rome to High Falls 36 miles; and 40 miles of river to Carthage. Canal to be supplied from Black river; estimated to afford at Smith's mill 20,000 cubic feet per minute. Feeder from Black river to the canal nine miles long. The supply of 20,000 cubic feet was for ordinary low water, and estimated four times more than would be required for the canal. The size of feeder and canal, 20 feet wide on bottom, 36 feet on surface, and 4 feet deep; the banks to be 3 feet above water line, and 8 feet wide on berme, and 12 feet towing path. The river to be improved by lock and dam; and for such improvement at an estimated cost of $12,000. The estimated cost of the canal at $602,544.

The inclined planes were intended for great elevations of not less than 45 feet. Inclined planes were used with success on the Morris canal. The boat is introduced from the upper level, after filling the lock through the paddle gate; this water raises the lower gate to its place, and the lock fills to a level with the water in the canal. The boat is then floated in, the upper gate shut, and by discharging the water from the lock, the lower gate falls by its own weight to its place, and the boat settles down upon the cradle, and is ready to move down the plane. There is a friction break on the rim of the water wheel to regulate the motion of the car, and also the common governor, turned by a bevel wheel on the arms of the car wheel; thus any accelerated motion of the car wheel causes the balls of the arms to fly out and disengage wedges that fall before each wheel, and cause the stoppage of the car in any part of the plane. The plane, at the summit, rises one foot above the water in the upper level. The moving power is a water wheel twenty-four feet in diameter. In the descent, a boat moves at an average of twelve minutes for a lift of seventy-five feet, and fourteen minutes for the whole operation.

PROGRESS OF THE CANALS IN 1831.

Beyond the ordinary repairs there was constructed and rebuilt in part on all the canals, in 1830 and 1831, 226 bridges, 20 aqueducts, 4 culverts, 28 waste weirs, and 75 miles walling and docking.

Total expended for repairs $194,405, for nine months, the law of last year fixing the fiscal year.

Amount of tolls collected $1,223,801 99

Dam across Chemung river, completed November, 645 feet long and 7 feet high.

Whole number of boats that arrived and departed from Albany, 14,963.

Total canal stock issued from 1817 to 1831 inclusive	$8,802,033 99
Total canal debt from 1817 to 1831 inclusive	8,055,645 86
Total canal expenditures by Canal Commissioners 1817 to 1832	10,768,634 85
Total canal expenditures by superintendents, 1817 to 1832	1,305,333 69

PROGRESS OF THE CANALS IN 1832.

Chemung canal and feeder completed September 10, 1831, and cost in detail as follows:

1,175,963	c. yds.	excavation,	average price	$9\frac{8}{10}$ cents	$115,263 70
533,912	do	embankment	do	$10\frac{2}{10}$ do	51,399 02

7,220 c. yds. slope wall	$3,468 54
28,775 lineal feet docking	1,551 24
6,303 rods fence	3,151 50
1,423 do removed	241 91
52 locks	84,131 59
76 bridges	8,110 23
1 dam across Chemung river	5,721 26
3 aqueducts	3,697 13
6 waste weirs, 5 culverts and 4 lock houses	2,199 00
Add engineering department	12,800 00
Removing buildings, piers and roads	22,860 39
	$314,395 51

Holmes Hutchinson made a complete survey and maps of the Erie canal from Canastota to Hudson river; also of the Champlain canal, embracing all the lands owned by the State. The same were placed on file in the Canal Department.

Oneida Lake Canal Company, incorporated March 22, 1832. The capital stock was $40,000, divided into shares of $25 each. Montgomery Hunt, Jno. E. Hinman, Samuel S. Breese, Wm. Fisk, I. S. Spencer, Henry Monroe and Nathan J. Stiles were the commissioners to open the subscription, at Utica; they were to receive $2 per day for such service. The company was to construct and maintain the canal for fifty years, to make it the same size as the Erie, and charge the same rates of toll.

COST OF ALL THE CANALS, INCLUDING INTEREST ON LOANS, UP TO DATE OF COMPLETION, MARCH 23, 1833.

The committee on canals, by an order of the House, signed by S. M. Stilwell, chairman, reviewed the whole canal policy and expenditures of construction, with great ability and eloquence, and gave the following condensed statement:

CANAL.	When commenced.	When completed.	Length in miles.	Number of locks.	Feet of lockage.	Total cost including interest on loans, engineering and com'rs pay.
Erie canal	1817	1825	363	84	689	$9,027,456 00
Champlain canal	1817	1825	64	21	183	1,179,872 00
Oswego canal	1826	1828	38	14	123	565,437 35
Cayuga and Seneca canal	1827	1829	23	11	83½	236,804 74
Chemung canal and feeder	1831	1832	39	54	516	314,395 51
Crooked Lake canal	1831	1833	8	27	270	136,101 17
Chenango canal	1833	....	97	116	1,021	....
			632	327	2,885½	$11,460,066 77

The whole cost, $11,460,066.77, includes interest on sums borrowed.

Total cost *improving Hudson river* between Waterford and Albany, as stated by Comptroller, from 1817, $98,706.75.

Expenditures by Canal Commissioners and Superintendents, from April 15, 1817, *to September* 30, 1832.

	By Commissioners.	By Superintend'ts.
Erie and Champlain canals	$9,847,620	$1,571,924
Oswego canal	538,356	45,661
Cayuga and Seneca canal	172,697	22,666
Chemung canal	298,538	
Crooked Lake canal	71,766	
Totals	$10,928,978	$1,640,252

Expenditures by Commissioners of the Canal Fund, from April 15, 1817, *to September* 30, 1832.

To Canal Commissioners	$9,809,304
Interest on Canal debt	4,150,553
Western Inland Lock Navigation Company	152,718
Myron Holley's notes	17,155
Weigh masters, collectors, printing, &c	84,767
Superintendents of repairs	1,561,004
Extinguishment of canal debt	750,535
Loaned and invested for the State	1,687,351
Total	$18,213,389

The cost of transportation on a bushel of wheat in 1832, from Albany to Rochester was $22\frac{4}{10}$ cents; for a barrel of flour 80 cents, including toll.

Progress of the Canals in 1833.

Crooked Lake Canal Completed,

October 10, and navigation opened October 21, 1833. *Cost of construction* $133,292.70; $3,039 were expended for repairs and collection, up to January 1st, 1834.

Chenango Canal.

Jno. B. Jervis was appointed chief engineer of the Chen[illegible] canal April 12, 1833. Under his direction surveys and estimat[illegible] were made of 175 miles of canal and feeders, and the drainage of nine reservoirs. The surveys were completed September 27. He was assisted by J. D. Allen, Isaac W. Crane, P. R. Root and A. Barrett, resident engineers. He made four estimates on different plans of locks, and two termini, and estimated the cost of present termination and locks at $959,222. The quantity of water required to supply the same was 3,243 cubic feet per m.

The basis used for drainage, the fall of rain that would descend into the reservoirs; in England this was computed to be one-third; Jno. B. Jervis used one-fifth. *Its construction was authorized* February 23, 1833, one million appropriated.

Holmes Hutchinson examined and reported the failing condition of the Rochester aqueduct, and the Commissioners decided to rebuild it.

Wm. Jerome examined, in October, the feasibility of obtaining an increased supply of water for the Jordan level, and reported in favor of the Owasco outlet. Fred C. Mills afterward examined the same and estimated the cost to make it navigable.

Reduction of toll by the Commissioners of 28½ per cent. going to tide-water and 14¼ per cent. going from.

Auction and Salt Duties.

The Commissioners of the Canal Fund stated that enough had been received from this source to pay the interest upon all the moneys borrowed for the Erie and Champlain, up to September 30, 1833, amounting to $5,913,621.

De Witt Clinton, jr. proposed to improve the Hudson by longitudinal dams and jetties.

PROGRESS OF THE CANALS IN 1834.

Total expended by Canal Commisioners from April 15th, 1817	$11,296,433
Total expended by superintendents from 1826	2,502,005
Total amount of tolls received from 1820 to 1834, inclusive	10,730,097

Descent in canal from Lake Erie to Rochester, observed:

Lake Erie to Tonnawanda,	8	miles,	descent	1	inch per mile.
Pendleton,	12	do	do	2½	do
Lockport,	7	do	do	1½	do
Rochester,	65	do	do	1½	do

Making total distance 92 miles, and total descent 146 inches.

This descent in the surface was necessary to supply the canal to Clyde, 154 miles.

Rebuilding structures on the Erie: 107 bridges, 48 lock gates, 197 culverts and gates, 11 waste weirs, 27 miles walling and docking, and the Troy weigh lock, rebuilt.

Surveys and maps of the Erie, Champlain, Oswego, Cayuga and Seneca canals, by Holmes Hutchinson, were approved and placed on file, Sept. 6th, 1834, in the Comptroller's office. The work was done by contract. During the season Mr. Hutchinson also completed surveys and maps of the Chemung and Crooked Lake canals and Glens Falls feeder.

Chenango Canal.

Work was commenced, and its estimated cost revised by O. W. Childs and I. W. Crane, under the chief engineer, John B. Jervis. Work between Sherburne and Green was put under contract in July, 1834. Land damages in estimates not included.

Estimated cost at engineers' prices, feeders and reservoirs	$1,960,456
Estimated cost at contract prices, feeders and reservoirs	1,859,849

Estimated cost of improving Glens Falls feeder, by H. Hutchinson, $127,829.

Total expenditure by Commissioners of Canal Fund from 1817, $20,241,620.

First law towards enlargement of the Erie canal, passed May 6th, 1834, entitled "An act to improve the canals of this State."

This law authorized the Commissioners to construct a second set of lift locks from Albany to Syracuse, of such dimensions with the canal as they should deem proper, and to take the waters of Nine-mile creek; also to reconstruct the Rochester aqueduct, and construct sluices around locks.

Holmes Hutchinson was employed under this law to make the surveys and estimates, and Nathan S. Roberts to rebuild the Rochester aqueduct. The latter submitted his report Dec. 26th, 1835, estimating the cost for 40 feet waterway at $242,890. Mr. Hutchinson submitted his report Jan 26th, 1835, estimating the cost of work embraced under his charge at $1,077,582. The size of proposed locks was 100 feet between quoins, width 15 feet, and thickness of walls 6½ feet. The average estimated cost of one lock (53 in number) was $17,670. The estimate embraced only the enlargement of structures.

Analysis of prices for the above estimate:

Quarrying per cubic yard		$2 25
Cutting $4\frac{15}{100}$ feet, each cubic yard of face at 50 cents		2 08
Dressing backing, $4\frac{15}{100}$ feet, each cubic yard at 10 cents		0 83
Cartage and freighting, each cubic yard		1 75
Laying into work,	do	2 00
Lime and sand,	do	0 50
		$9 43

Under act of April 22d, 1834, the Black River canal was resurveyed and estimated by Timothy B. Jervis, appointed May 22d. He made the total lockage 1,083½ feet, length of canal and feeder 46¾ miles, river 40 miles, and the aggregate cost, adopting two inclined planes, combined locks of stone and single of wood, $907,802, and all the locks stone at $1,068,437. Summit level above the Erie, 696½ feet; depression below High Falls, 387 feet.

PROGRESS OF THE CANALS IN 1835.

Scientific Reports submitted during the year, addressed to the Commissioners.

1st. By John B. Jervis, Holmes Hutchinson, and Fred. C. Mills, upon relative cost of transportation on canals and railroads.

The following document, transmitted to the Legislature by the Canal Commissioners, combines so much scientific information, and exhibits such depth of research in the subjects treated, that it seems but an act of justice to give it here entire.

REPORT

Of the Canal Commissioners on a resolution of the Assembly of the 23d February, 1835, *relative to the cost of canals and railroads.*

The Canal Commissioners, in obedience to a resolution of the Assembly, under date of the 23d ultimo, requesting them to report "at as early a day as conveniently may be, a statement showing the average relative cost per mile of canals and railroads, the average relative expense annually of repairs and superintendence, and the average relative charges per ton, or other given quantity for transportation; and also, whether in their opinion, any, and what articles of produce, merchandise, or manufacture, can or cannot, having a due regard to the saving of time, as well as other circumstances, be more advantageously conveyed on railroads than by canals, with the reasons for their opinion, and such observations on the general subject of this resolution, as they may deem appropriate to guide the action of the Legislature in reference thereto," respectfully submit the following report:

The subject submitted to the consideration of the Commissioners, is interesting in its character, and of some public importance. The comparative cost of constructing railroads and canals, the comparative cost of transportation, and the comparative expense of superintendence and repairs, are subjects which have occupied a large share of public attention; and respecting which, many speculative opinions have been advanced. At one period, the public were assured with some degree of apparent confidence, that railroads would supersede canals; and it will, no doubt, be recollected by many, that inquiries were made as to the probability of converting the Erie canal into a railroad.

Experience has gradually developed the relative utility of canals and railroads for the transportation of property. We think the period is not distant, if it has not already arrived, when the superior advantages of a canal over a railroad, as a means of conveying property, will be indisputably demonstrated.

It is believed that it will not be difficult to show, that the expense of transportation on railroads, is very materially greater than on canals. In addition to this, there are other important considerations in favor of canals.

A canal may be compared to a common highway, upon which every man can be the carrier of his own property, and therefore creates the most active competition, which serves to reduce the expense of transportation to the lowest rates. The farmer, the merchant, and the manufacturer, can avail themselves of the advantage of carrying their property to market, in a manner which will best comport with their interest.

Much of the property which passes on the canals, is carried by transportation companies; but the largest portion is carried by individuals and small associations. The individual who becomes the carrier of his own property, has the advantage of paying nearly one-half of the expense of transportation, in the regular course of his business; and the cash disbursements often do not much exceed the payment of the tolls. To the farmer, the profits on return freight in many instances give a full indemnity for the expense of taking his cargo to market.

On railroads the proprietors must necessarily be the carriers; and this is the general practice.

It appears that in the State of Pennsylvania an attempt has been made to permit an indiscriminate use of railroads. On this subject the Canal Commissioners of that State, in their last annual report, remark as follows: "Before quitting the subject of railways, the Canal Commissioners take occasion to remark, that the experience of the past season has convinced them that these roads, either as it regards revenue, facilities to trade or general accommodation, will not answer public expectation, if thrown open like public highways, to be used indiscriminately. Every person who has paid the least attention to the transportation upon them since they were opened, must be convinced that an unrestrained and indiscriminate application of motive power is attended with danger, delays, and interruptions. Safety, regularity, and punctuality, must first be secured before those important links in our great chain of improvements can fully answer the purpose for which they were designed, and the Board are decidedly of opinion that this desideratum is only to be obtained by the Commonwealth furnishing all the motive power, and directing its application."

There is some difficulty in furnishing an accurate comparative statement of the cost of constructing canals and railroads. The character of the country in which a canal or railroad is situated, and the manner in which they are constructed, have an important influence in determining their cost; and unless the prominent circumstances which have a bearing on this question are understood, it would be difficult to do more than furnish an approximate estimate.

To furnish a statement of the actual cost of several canals and railroads, with a brief allusion to the prominent features which have a bearing on the question of cost, is the best evidence which can now be furnished, in answer to that branch of the inquiry.

The relative annual expense of superintendence and repairs, is not the subject of estimate on any fixed data; but must rest on experience. This expense would depend on circumstances which are hardly similar in any two cases. The character of the country, the permanency which is given to the work in its first construction, and the amount of business, governs this question to a great extent.

The Erie canal was commenced in 1817, and completed in 1825. Every part of it has been in use 10 years, and some parts of it 15 years. In this period many of the structures of wood have been twice renewed, and all of them once. Several important improvements have been made, such as the widening of aqueducts, &c.: and the banks on much the largest portion of the line have been faced with stone and timber. The great facilities which are furnished to accommodate the large trade which is done upon it, by removing bars and deposits in the bottom of the canal, guarding against breaches, their prompt reparation when they occur, graveling the towing path, attendance at the locks, &c., &c., exceed the expenses which ordinarily occur on canals, and is much greater than would be necessary where a limited amount of business is done.

A statement of the average annual expenses for superintendence and repairs, from 1828 to 1835, will furnish the most accurate information which can be given in regard to this expense.

The annual expense of repairing railroads has not yet been developed by experience.

The Manchester and Liverpool railroad was completed in 1830. The Baltimore and Ohio railroad in 1831; and the Delaware and Hudson railroad in 1829. These companies have severally given a particular statement of the actual annual cost for superintendence and repairs. But this expense will fall short of a true average after the lapse of time within which the wood work of these roads must be renewed.

The proprietors of these roads have furnished a detailed statement of the actual cost of transportation, independent of tolls or profit to the company; which, compared with the actual cost of transportation on the Erie canal, will furnish the best data which can now be given, of the relative expense of transportation on canals and railroads.

The Commissioners have not had it in their power, since the receipt of the resolution, to which they are now replying, to investigate this subject with that care and attention which its importance demanded. One of the acting Commissioners is absent, on account of severe indisposition in his family, and another has been in feeble health. Under these circumstances, and with a view of giving the subject a speedy and careful examination, they called to their aid John B. Jervis, Holmes Hutchinson, and Frederick C. Mills, Esqs., civil engineers, of experience in the construction of canals and railroads. Their report, accompanied by several interesting tables, is herewith submitted.

The Commissioners have examined this report, and believe the general results to be correctly stated. This report contains all the information which can now be given in answer to the several inquiries submitted to their consideration.

WM. C. BOUCK,
MICHAEL HOFFMAN.

March 17th, 1835.

Report of John B. Jervis, Holmes Hutchinson and Frederick C. Mills.

To the honorable the Canal Commissioners of the State of New York:

GENTLEMEN—

We have examined the question you submitted to our consideration, in relation to the relative cost of construction and repairs of canals and railroads, and also the relative expense of transportation, and present in the following report, the facts and views we have been able to obtain. The importance of the subject compels us to regret that more time could not consistently have been taken to obtain further facts, and allowed us to carry the investigation into greater detail. We have felt compelled, in a great degree, to confine ourselves to an exposition of prominent features in the two methods of facilitating internal communication. We believe, however, the facts presented, and the exposition of the bearing of those facts, will be found useful in leading to correct conclusions in regard to the question under consideration.

RAILROADS.

The utility of railroads is materially, and in some respects, peculiarly affected by the ascent and descent that is overcome, and the relative amount of trade requiring transport in opposite directions. For instance, a railroad requiring transport only in one direction, would be most favorable with such a declivity in the direction of the freight, as would require the same power to move the loaded wagons, as would be necessary to return with the empty ones; and this declivity would decrease in ca requiring transport in both directions, and become level whe freight was equal.

In this country it rarely occurs that freight is equal in b directions; more frequently it is 2, 3 and 4 to 1. To obtain most favorable graduation to the trade to be accommodated, i essential that it be uniform, or nearly so; which the route wo not often admit without too great expense, and in some ca would be impracticable. On important lines for general tra that have any considerable extent there will, from the charact of the country, often require a level, and sometimes a sma ascent, in the direction of the greatest trade; and it would be favorable compromise to exchange all acclivities and declivit for a level road. Though there would be exceptions, still it believed a level road would afford a fair standard in determin the general question of utility.

Below will be found a statement of the cost of several ra roads, and in some cases the cost of transportation.

It is to be regretted that more authentic information of practical character is not in our possession. The authorities, a well as the facts, are stated, to show the weight they are entitl to. In some important cases they are authentic, and these wi be adopted as the basis of our conclusions.

Baltimore and Ohio Railroad.

From Baltimore to Point of Rocks, 67½ miles, by report o chief engineer, (October, 1832,) this section was stated to be nearly complete, and the cost $29,193 per mile. In a document of second session 22d Congress, No. 93, it is asserted this road had then cost nearly $34,000 per mile. We have examined the subsequent reports of the directors and their officers, and find nothing to change the statement of $29,193 per mile.

The grading of this road is done in a substantial and durable manner; over $\frac{2}{3}$ of the superstructure is timber sills and rails capped with an iron plate, $\frac{1}{4}$ (or $\frac{26}{100}$) is stone rails, capped with iron plates, and $\frac{1}{17}$ is timber rails on light stone blocks.

The cost of transportation for the year ending 31st September, 1834, as per report of superintendent of transportation, was for motive power and all other charges, (excluding repairs of road,) except interest and fund for renewal of wagons..... $62,348 57

Superintendent of machinery reports 1,000 wagons
on the road; their cost is not given. They proba-

bly cost from $150 to $200 each; if on steel springs, the latter, otherwise the former; they may be estimated at $150 each, which for 1,000, is $150,000; interest on their cost, and to provide a fund for renewal, is believed should be at 25 per cent., which is	$37,500 00
Total cost of transportation, exclusive of tolls or profit, for 56,120 tons, is	99,848 57
The average charge of the company, per said report, is within a small fraction 4⅔ cents per ton per mile, produces the sum of	116,254 79

The ratio of receipts to expenditures is 1 to 0.85, and 4.66 × 0.85 = 3. 96 cents per ton per mile, as the expenses.

The expenses the previous year are stated by same report to have been higher; but as we have not the detailed statement, we cannot give the exact difference.

This railroad has ascents, descents, and curves, which affect the economy of transportation.

In regard to curves, this road may be considered as having more than is usual on railroads, designed mainly for general trade.

All lines of railroad, of any considerable extent, will be curved more or less, according to the character of the country through which they are constructed. It is the first object to have it straight, and next, the lightest curvature the country will admit. The minimum will, therefore, be determined by local circumstances. While it is considered this road has more curvature than will occur as a general average, it is obviously impracticable to determine what this average may be. The chief engineer J. Knight, of this (Bal. and Ohio) railroad, made experiments on the increased resistance produced by curves, which led him to the conclusion that in a curve having a radius of 400 feet, the traction was increased 50 per cent. If locomotive engines were used, then loads would be regulated by the greatest resistance they had to overcome, on any part of the route; but a horse can increase his effort, for a short distance, which enables him on a road that has occasionally sharp curves or ascents for moderate distances, to perform a greater average of useful effect than can be obtained from locomotive steam power. The freight business for this road is performed by horse power. The sharpest curves generally occur in short distances, intervening between straight lines and larger curves, and will not, therefore, affect the cost of transportation to so great a degree as if locomotive steam power was used. If we assume ten per cent. of the resistance on a level and straight line, as the excess over a general average arising from extra curvature on this road, and apply it to the section between Parr Ridge and Baltimore, we shall not probably be far from its true influence on the cost of transportation.

The next and most important question that affects the cost of this transportation is, the ascent and descent. The character of this road in relation to its elevations, seems to indicate the propriety of dividing it into sections, and applying on each the power necessary without regard to the other. The following divisions have therefore been made, to wit:

1st. From Baltimore to Parr Ridge, foot of 1st inclined plane—length, 40¼ miles; ascent westward, 590 feet; descent, 23 feet; total, 613 feet; ascent averages 14.75 feet per mile.

2d. Embraces the four inclined planes that pass Parr Ridge, 1.94 miles; ascent and descent, 429 feet, viz:

No. 1,	2,150 feet,	rise	$\frac{1}{26 \cdot 75}$ =	80 feet,	Total ascent 179 feet.
2,	3,000	do	$\frac{1}{30 \cdot 12}$ =	99 do	
3,	3,200 feet,	fall	$\frac{1}{20 \cdot 05}$ =	160 do	do dec't 241 do
4,	1,900	do	$\frac{1}{23 \cdot 35}$ =	81 do	
				Total,	420 do

Intermediate level about 3½ miles.

3d. From foot of plain No. 4, to end of continuous declivity westward, 11¼ miles; total descent, 285 feet; average, say 25 feet per mile.

4th. The remainder of road, to Point of Rocks and branch to Frederick, a fraction over 16 miles; descent westward, 169 feet; average 10.56 feet per mile; ascent westward, 131 feet.

Total rise and fall, 300 feet.

The ascent westward, for the four divisions is,	900	feet.
The descent do do	718	do
Total ascent and descent,	1,618	do

By the report referred to, it appears the ratio of freight moving eastward to that moving westward, was nearly as 2 to 1; for calculation we therefore adopt this ratio.

It has been shown that the first division has an average ascent of 14.75 feet per mile. This ascent, however, is not uniform; in several places, for short distances, it descends westward, some portions are level, and the ascents are at rates varying between 2.64 and 37.48 feet per mile, excepting a short piece near the foot of inclined plane. They seldom much exceed 20 feet, except for short distances. The length of grades at the higher rates of ascent is generally less than one mile, and alternate with those of medium rate; except near the inclined plane. In view of the character of this division, it is believed animal power will allow such variation, as to accommodate the varying resistance with nearly as much economy as on a uniform ascent. If we calculate on a uniform ascent of 18 feet per mile, we shall not probably vary essentially from the true economy of the case.

It has been observed the freight is as two to one in the opposite direction, being least westward. The weight of the wagons will probably be one third of the gross load; and for computation, we may assume the wagon to weigh one ton; and consequently the freight eastward will be 2 tons, and that westward 1 ton.

The resistance from friction is taken at $\frac{1}{250}$ of the gross load, the velocity being low. On a level this will require nearly nine pounds per ton, on an ascent of eighteen feet per mile, gravity will be $\frac{1}{293}$ of the load, or 7.64 pounds per ton. The wagon and its freight going westward, makes a gross load of two tons; the resistance will therefore be $9+7.64\times2=33.28$ lbs. To carry on a level road a load which, including wagons, would be three tons, the resistance would be $9\times3=27$ lbs. The road, with a few exceptions, descends eastward or is level. The ascents are small and so near the eastern termination, that, in the average, less power would be required than on a level; but we require 33.28 lbs. to move westward, after providing for varied effort by the animal. Now, as a general result, we could not expect a more equal ratio of freight in the two opposite directions, than in this case, and if 27 lbs. is required on a level, we have an excess of power to provide for the load moving westward, of $33.28-27=6.28$ lbs., and as this will return with the opposite load, we have extra power for the two directions $=12.56$ lbs. more than required for a level road, or 23 per cent. extra. This, added to the extra curvature of 10 per cent. raises the extra traction to 32 per cent on this section. The cost of the moving power is nearly two-fifths of the total expense, and $32\times.40=14.80$, say 15 per cent., the cost of transportation over a level road; and $40.25\times.15=6.03$, or equal an increase in the length of this division of six miles.

2d division. The total ascent westward is on the inclined planes Nos. 1 and 2; their total length is 5.150 feet, and ascend at an average rate of one in twenty-eight and three-fourths. It is obvious, the load moving westward will determine the expense of power, as that in the opposite direction on these planes will descend by its own gravity, requiring only the expense of brakemen to control its descent within a safe velocity, which may be done by a part of the drivers, whose teams could be led back by others. In moving up this ascent, a horse would require 35 per cent. of his power to overcome the gravitating force of his body; but as he would be loaded only in one direction, and the length of either plane but little exceeding half a mile, it is believed to be a fair estimate to compute in this case, the useful effort of his power, as equal what it would be on a level. We have one ton of goods and one ton of wagon, making a gross load of two tons moving westward. The total resistance up the plane will be 173 lbs., or 5.4 times greater than the load in the opposite direction, (3 tons gross,) would be on a level. The two planes are together 0.97 miles in length. The ascent will make the extra resistance equal $5.23 \times .4 = 2.09$ miles.

The 3d and 4th planes descend westward; their total length is 5,100 feet, and descend at an average rate of $\frac{1}{21.15}$. For these planes, we must compute the power required to ascend them with the load moving eastward, which is 3 tons, including wagon. The horse will require 47 per cent. of his power to overcome the gravitating force of his body up the plane; and though he will, as in the case of the other planes, be loaded only in one direction, still it is believed that 10 per cent. should be taken from his average useful effect in ascending Nos. 3 and 4. The resistance of 3 tons up these planes will be 344 lbs., equal 11.73 times greater than on a level, or including the loss in the effective power of the horse, equal 13.13 times greater. The two planes are $.96 \text{ miles} \times 13.13 \times .4 = 4\frac{3}{4}$ miles extra length of transportation. The influence of the planes on this division increases the moving power equal to what would be required for 17 miles of level road, and taking the moving power at 40 per cent. of the total expense of freight, a fraction over 6¾ miles, entire cost of transportation.

3d division—Ascends eastward at the average rate of 25 feet per mile, varying from 9.76 to 52.80. The grades that have the higher rates of ascent are short, and in view of the small amount of labor required of the horses in the opposite direction, it will probably not vary materially from the truth, to compute the power at the average rate of ascent, or $\frac{1}{211}$. A load eastward is 3 tons, including wagons, and the resistance will be 58 lbs., equal 2.14 times that on a level; or for 11.25 miles, requiring extra moving power, equal what would be required for 12.82 miles on a level, or equal the total expense of transportation for 5⅛ miles.

4th division—Is quite of an undulating character; the ascent is greatest in the aggregate in the direction of the greatest trade, but the grades have a less rate of ascent than in the opposite direction. The average ascent in the direction of the greatest trade, will be a fair basis of computation for the section. This is $\frac{1}{500}$, and the resistance for 3 tons, (as before,) is 40.44 lbs., or 50 per cent. greater than a level. For 16 miles the extra moving power is equal 8 miles on a level, or equal the total cost of transportation for 3¼ miles nearly.

In the first division	we have extra	equal	6 miles.
second,	do	do	6¾ do
third,	do	do	5⅛ do
fourth,	do	do	3¼ do
			21⅛ do
Total length of road is			71 do
			—92.12

The actual cost of transportation has been shown to be 3.96 cents per ton per mile. To reduce this to our standard, we have the cost of transportation, exclusive of toll or profits, 3.05 cents per ton per mile, with freight as two to one in the different directions.

By report of superintendent, the moving power cost 1.08 cents per ton per mile.

Repairs.

Year ending October, 1833, $444 per mile.
1834, $321 do
Average for 2 years, $382.50.

A road constructed mostly of timber will vary much in the cost of repairs for different years, and several are therefore necessary to obtain a proper average.

Cost of transporting passengers per mile, 1.98 cents, as stated in Hazard's Register of Pennsylvania, v. 15, p. 112.

Liverpool and Manchester Railway.

In a statement published by Mr. Booth, the treasurer of the company, dated June 30, 1830, the expenditure up to that time, including an estimate, (the road was at this time nearly completed,) to finish some unimportant items of work, it appears the construction of the railway, exclusive of warehouses, wharfs, offices, engines, wagons, and other items not connected with the construction of the road, cost £694,595 for 31 miles, equal £22,406 × 4.80=$100,748 per mile. There have, subsequently, been heavy expenditures not embraced in the account of repairs but we are not sufficiently advised of their object to say whether or not any part of it belonged to the amount of the original construction of the road.

Repairs.

It appears from four semi-annual reports of the directors, the expense of repairs has been as follows, to wit:

Report of July, 1832,	1st January to 30th June....	£7,331	0	6
" January, 1833,	1st June to 31st Dec....	6,878	4	3
" July, 1833,	1st January to 30th June...	6,714	9	3
" January, 1834,	1st July to 31st Dec....	6,425	14	8
Total for two years	....	£27,349	8	8

Equal, for 31 miles, 882 × 4.80=$4,233 per mile, which, for one year, is equal $2,116 per mile, commencing about a year after the road was opened for business.

A table is given of the general expenses in the six months previous to that reported in July, 1832, in which the expenses of repairs is included with some other items. This aggregate sum is very nearly the same as reported in detail, showing there had been no material variation in repairs for the six months previous to that particularly reported.

Transportation.

The reports above referred to, embrace four semi-annual accounts for transportation, and one tabular view of transportation for six months previous, from which the following table is made.

The report of July, 1832, contains a statement of transportation for the two semi-annual terms preceding.

In the tabular account given by the directors, the maintenance of way and rate, taxes and omnibusses are charged to transportation; but in the following table these are not included, as it is the design to exhibit the cost of transportation separate from other expenses; these items are given in the table of directors' reports, with others, but are separate in the general account.

TABLE *showing the cost of transportation per passage, and per ton of merchandise, for* 31 *miles, on the Liverpool and Manchester Railroad.*

	Report of January, 1832.				Report of July, 1832.				Report of January, 1833.				Report of July, 1833.				Report of January, 1834.				Average of five semi-annual statements.			
	Cost per passenger.		Cost per ton of merchandise.		Per Passenger.		Per ton of merchandise.		Per passenger.		Per ton of merchandise.		Per Passenger.		Per ton of merchandise.		Per passenger.		Per ton of merchandise.		Per passenger.		Per ton of merchandise.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Disbursements in the merchandise department, consisting of porterage, salaries, carting, stationary engine, disbursements, &c. &c.	....		4	6¾	....		4	0	....		3	5	....		3	7½	....		3	9¾	....		3	10¼
Disbursements in the coaching department, comprising porterage, salaries, repairs, &c. &c.	0	7	....		0	7¾	....		0	6¾	....		0	9¼	....		0	9	....		0	7¾	....	
Locomotive power account, proportioned according to the number of trips of 30 miles in each department; comprising repairs of engine, wages, coke, &c. &c.	0	6¼	1	11	0	7½	1	7¼	0	10¾	1	2¼	1	0	1	6¾	0	8¾	1	6¼	0	9	1	4¾
Sundry disbursements, proportioned according to receipts, as between coachery and merchandise, comprising police and gate establishment, and general office	0	1⅞	0	3¾	0	2	0	4	0	1¾	0	3¼	0	2	0	3¼	0	2⅛	0	2⅞	0	2	0	3⅜
Interest, on loans and chief rents, proportioned according to the amount of profit in each department, calculated exclusively of these items of disbursement	0	4¾	0	4¾	0	6¼	0	8¼	0	4½	0	7	0	5	0	6¾	0	4¼	0	4⅞	0	5	0	6⅝
Total	1	7⅞	7	2¼	1	11½	6	7½	1	11¾	5	5½	2	4¼	6	0¼	2	0⅛	5	11¾	1	11¾	6	1

From the reports of the directors and their statement of general accounts, it appears probable, the amount of repairs of wagons and coaches, includes the purchase of new ones when required, to supply the place of those that fail; the interest account is supposed to be interest on cost of locomotives, engines, coaches, wagons, &c.; there is no other item that embraces the interest on the outlay, and it is presumed this is intended. There is a charge for carting included with other items, and from the general account would appear to be about 6d per ton; we have not deducted this item, for the reason it was impracticable to determine exactly what it amounted to; and the question whether the interest account included the total interest on the outlay for the transportation department, with such allowance as would, beyond what was included in repairs, make the necessary renewals, being doubtful, we have thought a further reason for leaving it as it is. The table cannot, however, be far from the proper expense of transportation.

For Merchandise.

The lowest cost per ton is 5s. 5d.=$1.31, or per mile,..4.22 cts.
The highest cost per ton is 7s. 2¼d.=$1.72, or per mile,.5.55 "
The medium, or average of the table is 6s. 1d.=$1.46,
or per mile,.................................. 4.70 "

For each Passenger.

The lowest cost is	1s. 7⅞d.,	equal to	$0.39¾,	or per	mile,	1.28 cts.
The highest "	1s. 4¼d.,	"	0.56½,	"	"	1.82 "
The average "	1s. 11¾ d.,	"	0.47½,	"	"	1.53 "

The table below contains the aggregates for one term of six months later than the above table; it does not appear that transportation was lower for this term than previously, but on the contrary is confirmatory of the above average results; which may therefore, be viewed as based on three years' experience.

TABLE *showing the number of passengers, and tons of merchandise, passing the whole length of the road; and also receipts and expenditures for the entire transportation, including the way and coal business, and that passing the whole length of the Liverpool and Manchester road.*

Information, where obtained.	Passengers.			Merchandise.			Total.		Excess of receipts over expenses.	Ratio of receipts to expenditure.
	No.	Expense.	Receipts.	Passing through.	Expenses.	Receipts.	Expenses.	Receipts.		
		£.	£.	*Tons.*	£.	£.	£.	£.	£.	
Semi-annual report of directors, dated July, 1831, for 6 months, ending Dec. 31, 1831...	....	25,930	58,348	....	21,841	29,022	49,025	89,809	40,784	as 1.83 to 1
Semi-annual report of directors, for 6 months, ending 30th June, 1832..................	174,122	21,957	40,044	57,174	22,445	30,436	46,658	74,706	28,048	1.60 1
Semi-annual report of directors, dated January, 1833, for 6 months, ending 31st December, 1832................................	182,823	23,744	43,120	61,995	22,277	35,509	48,278	80,902	32,624	1.67 1
Semi-annual report of directors, dated July, 1833, for 6 months, ending 30th June, 1833.	171,421	24,746	44,130	68,284	26,447	38,149	52,900	86,071	33,171	1.62 1
Semi-annual report of directors, dated January, 1834, for 6 months, ending 30th December, 1833................................	215,071	27,345	54,685	69,806	27,357	38,641	56,350	97,234	40,884	1.70 1
Railroad Journal, vol. 3, 609, given as facts from report of directory of July, 1834, for 6 months, ending June 30th, 1834..........	244,326	....	50,770	77,528	....	44,014	60,092	94,784	34,692	1.57 1

NOTE.—It will be perceived the column of tons only embraces that passing the whole length of the road, while the receipts and expenses on transportation include the way business.

Having ascertained the cost of transportation on the Liverpool and Manchester railway, we now proceed to reduce the cost of freight to our standard of comparison; a level road.

Inclined plane at Liverpool.

Length, 1.12 miles; rise $\frac{1}{48}$. The extra cost of the transit for moving power, taking the average from two semi-annual reports, is 1.80 cts. per mile, 2.02 cts. for the total length, per ton; equal for total cost of transportation, to 0.43 of a mile, on a level.

Sutton and Whiston planes,

Are each $1\frac{1}{2}$ miles long, and have an inclination of $\frac{1}{96}$ or 55 feet per mile. They incline in opposite directions, and therefore, if the trade was equal in each direction, only one plane should be calculated as affecting the total transportation; as it is obvious, a load passing in either direction, would only require additional power to ascend one plane. In the reports of the directors they give the total freight, not distinguishing between the different directions; and we are left to determine, from the general character of the trade, whether any and what difference there was. It appears that not more than $\frac{1}{6}$ of the tonnage between the two cities passes on the railway; and we, therefore, are led to infer the railway takes the lighter character of freight, which is, probably, about equal in both directions; and our computation of cost is made on this basis.

This road being worked entirely by locomotive steam power, except the inclined plane at Liverpool, which has stationary power, our computation is made accordingly.

In ascending the plane the resistance will be $\frac{1}{225}$, (friction,)+ $\frac{1}{96}$, (gravity)$=\frac{1}{67}$, or ratio to a level of (3.35 to 1,) or a little more than three and one-third to one. The power of the engine will be reduced by its gravity, and that of its tender to 70 per cent. of its power, on a level; or to make it equal its power on a level, it must be increased to 142 per cent., which makes the cost of moving power to ascend the plane, as compared with a level, as 4.75 to 1, or four and three-fourths to one. The extra moving power to ascend this plane over a level, is equal to the transit of 5.62 miles on a level. The moving power is 26 per cent. of the total transportation, exclusive of the interest account in which the items of moving power and wagons are blended; this will not be less than 4 per cent., making the total cost of moving power at least 30 per cent. The extra cost of the planes are, therefore, equal 1.68 miles entire transportation on a level.

The greatest inclination on any part of this railway, except the inclined planes above mentioned, is $\frac{1}{880}$ or 6 feet per mile. It is presumed the ascent of this inclination will regulate the load of the engines, on which the resistance will be $\frac{1}{225}+\frac{1}{880}=\frac{1}{179}$, or ratio to a level of 1.25 to 1. The power of the engine will be reduced by its gravity, and that of its tender to 97 per cent., or its power must be increased over what would be required on a level, say to 104 per cent., making the cost as compared with a level, as 1.30 to 1. This will be applicable to 27 miles of road, on which the extra cost for moving power is equal 8.1 miles, or for entire transportation equal 2.43 miles.

The influence of the elevations on this railway in increasing the cost of transportation over that of a level, is (43+1.68+2.43=4.54,) a little more than four and half miles of level way. The actual average cost of transportation for 31 miles was found to be (4.7,) nearly four and three-fourths cents per ton, which, reduced to a level road, we find to be (4.07,) over four cents, per ton, per mile.

An interesting fact is developed in this investigation, in relation to the comparative cost of transportion on inclined planes by stationary and by locomotive steam engines. The plane at Liverpool is worked by stationary steam power, and has an inclination of $\frac{}{48}$ or 110 feet to the mile. The Whiston and Sutton planes, worked by locomotive steam power, have an inclination of $\frac{1}{96}$ or 55 feet in a mile, being exactly half the inclination of the Liverpool; yet the cost of moving power on the Liverpool to Whiston or Sutton is as 1 to 2.90; showing that locomotive power, for an ascent of 55 feet to the mile, is about 3 times the expense of stationary power for a plane 110 feet to the mile, calculated for equal horizontal distances. It should be observed, in relation to this fact, that economy of stationary power on inclined planes, depends materially on the amount of business. In this case it was about 500 tons per day.

Baltimore and Washington Railroad.

This road commences at a point in the Baltimore and Ohio railroad, about 6 miles from Baltimore, and extends 30 miles to the city of Washington. Its operations are conducted by the Baltimore and Ohio company. In their report of October, 1833, they state the estimated cost at a little over $53,000 per mile for 26 miles. The estimate for the whole 30 miles is given at $50,000 per mile, in a report on canals and railroads, as presented 25th June, 1834, to the House of Representatives in Congress. In their report of October, 1834, the directors say the graduation and masonry (the part of the expenditures liable to the principal contingencies) is nearly completed; they make no allusion to the probability of the work costing more or less than the estimate; and as it would be natural to do so, if any important disagreement was probable, it is inferred the road would cost the estimated sum; and being so near completed we have thought it proper to put it in the table. This road has iron rails on stone foundation, except the embankments, which have timber foundation.

Columbia Railroad.

This railroad is 82 miles long, and per last report of Pennsylvania commissioners, the road has cost, including an estimate for an unimportant amount of unfinished work, $40,450 per mile. It has mostly iron rails, partly on stone and partly on timber foundation.

Allegany Portage Railroad.

This railroad is 36 miles long, and per report of Pennsylvania commissioners, has cost, including a small estimate for unfinished work, $47,977 per mile. It has iron rails for a fraction over two-thirds its length, about half of which are on a stone foundation, and the balance on timber; nearly one-third is timber road with iron plates.

Mohawk and Hudson Railroad.

The main stem of this road is 16 miles in length. It has timber rails with iron plates, about half of which are on a stone foundation, and the other half on timber. Cost per mile of double road, $38,107, per company books. (They have also about 3½ miles of single road in branches, that cost $15.847 per mile.)

Actual cost of transportation for freight by locomotive and stationary steam, 3.5 cents per ton per mile. All the ascent for the greatest trade, (being as 3 to 1,) is overcome by one stationary engine, which does not materially enhance the ratio of cost over a level, taking the whole road. Experience has been quite limited on this road, and considering that the ratio of trade in different directions, in connection with the facility of overcoming the principal elevation by stationary power, would not materially increase the cost of transportation over a level, it has not been thought important to reduce it by computation. The cost of transporting passengers has been 1.7 cents per mile.

Saratoga and Schenectady Railroad.

This railroad is 22 miles long. It is constructed with a timber rail, capped with an iron plate on timber foundation, except about three miles that has a light stone foundation. This road has a single track; it cost, per report of directors, November, 1832, $11,010 per mile, exclusive of building, &c.; to make a second track of the same character, would cost $6,000, making the total cost for double road $17,010 per mile.

Delaware and Hudson Canal Company Railroad,

Is 16 miles long, has 5 miles of double and 11 miles of single track. The valleys on this road were generally bridged with timber. The road is timber with an iron plate. It cost originally, including stationary engines, about $10,500 per mile, (the exact amount not known.) To have made it double would have raised the expense to $14,000 per mile; average annual repairs for four years is $623 per mile. Transportation when the business is at 250 tons per day, is 4 cents per ton per mile, and when 500 tons per day, is 3 cents per ton per mile. This arises mostly from the cost of operating the planes, which is nearly the same in both cases.

The ascent of this road (855 feet) is overcome by five stationary steam engines, working on planes whose total length is 2½ miles. The cost of motive power for 500 tons per day, averages essentially the same as it does for horse power on a level, having the same in horizontal length. From the summit the principal descent is effected by three self-acting engines, so arranged that the loaded wagons draw up the empty ones; and the balance of the declivity is advantageously arranged for a descending trade. The economy in the use of stationary steam power, arising from the cheapness of fuel and the great regularity which may be obtained in a coal business, and the comparatively small amount of agencies to conduct the business, leave no doubt on our minds that transportation is effected on this road as cheap per ton per mile as a general business could be on a level road.

Newcastle and Frenchtown Railroad,

Is 16 miles long; timber rail capped with iron plate, about one-third on light stone foundation and the remainder on timbe cost $30,000 per mile, (see report of committee on roads a canals to Congress, January 25th, 1834.)

Camden and Amboy Railroad.

The part extending from Amboy to Bordentown is 33 miles length; is believed to be entire iron rail, partly on stone a partly on timber foundation; cost (as per Congressional rep above mentioned,) $30,000 per mile.

South Carolina Railroad,

Is 130 miles long; timber rail capped with an iron plate. This road is built on piles; no embankments made in the gradin cost about $7,000 per mile. It is not known whether it is a singl or a double road, but believed to be mostly single track.

There are several important railroads in the United State which we should have been gratified to have added to tho above given; but we have not the information in relation t them that would enable us to derive any practical advantag There are others that we have not thought proper to introdu in a question that relates to the general utility of railroads a public thoroughfares; they are roads made mostly for loca objects, or for short distances, where the surface of the groun is nearly level, and the road made to conform nearly to th natural level or inclination, and very little expense incurred to remove those irregularities in the surface, which in a road of any considerable length and importance are generally encountered, to obtain an economical grade; and the superstructure of such roads are usually made in an imperfect manner, not calculated to serve the purpose of accommodating an important general trade.

In the roads described it is believed a fair view may be obtained of the general question of cost. In their *graduation* some have been of an expensive character, to wit: The Baltimore and Washington, Allegany Portage, the Columbia, Mohawk and Hudson, and part of the Baltimore and Ohio, though on the average the latter cannot be much above a medium; the Camden and Amboy, and the Newcastle and Frenchtown rather below a medium, and the Saratoga as very favorable. The South Carolina road having been placed on piles, excavation has been avoided as much as possible, and embankments omitted altogether, by which the expense of grading has been very little. The general character of the superstructure has been stated; and their rails, or the foundation of the rails, appears to be to a greater extent of timber.

The superstruction of railroads when composed of timber with the rail capped with an iron plate will cost, for a double track, from $6,000 to $10,000 per mile, according to the value of timber and the stability given to the road; (this is exclusive of grading.) The cost on the Baltimore and Ohio, for this kind of road, was $8,852 per mile. When composed of iron rails, laid on stone foundations, the cost will vary from $18,000 to $25,000, according to the convenience in obtaining stone, the extent of the ballasting, and the weight of rail that may be adopted; the probable average may be $22,000 per mile. The difference then, between a medium of the two kinds, is $14.000 per mile. To have adopted the iron rail on a stone foundation in the roads mentioned, would have materially increased their average cost. But in the first construction, it is usual, even when iron rails are adopted, to put down a timber foundation to support them on the embankments, until the embankments have time to become fully settled.

The first railways in England, were constructed of timber without any iron. The timber being found to wear too rapidly under the wheel, the iron plate was then put on. From this rude beginning in railroads, their advantages began to be developed; and experience soon suggested improvements. Hence we find the wooden rail soon abandoned, even in the coal districts. Cast iron rails on a stone foundation followed timber; and now wrought iron is generally used in preference to cast iron. These remarks are introduced to show the result of experience in England. In this country, timber will doubtless be used to a greater extent, and for a longer period, than it was in England. The cheapness of timber, the want of capital, and the limited amount of business in many places, will operate as causes to produce this result. We already observe, however, in this country, a departure from the use of timber rails on several important railroads. Among those who have critically attended to this subject, there is probably very little difference of opinion, in regard to the most suitable material for rails and their foundation, when an extensive business may be anticipated, and particularly where a high velocity is an object. The Baltimore and Ohio railroad company, after an experience of several years with timber rails, have come to the following conclusion, as appears in their last annual report: "In the construction of the Washington road, the board have had regard to its durability, not less than to making it a source of immediate profit to those interested in the undertaking. The experience of the main stem, has *conclusively* shown, how important it is, to avoid the expense of repairs of the railway, which not only materially affect the revenue, but occasion constant *interruption* and *inconvenience* to the *travel* on the road. True economy consists in constructing the road, in the first instance, so as to obviate the necessity of *frequent* repairs, and to enable the *motive power* used in transportation, to be employed to its fullest effect, without the *fear* of injury to the rails or bridges over which it passes in the performance of its daily work."

Timber is found to be less durable in a railroad than in almost any other situation. The action of the carriages tends to open the pores of the timber, which renders them more liable to imbibe moisture; all horizontal joints are much exposed under this action, and particularly that under the rail plate. There is, no doubt, situations where timber may be advantageously adopted. The cheapness of this article, the scarcity of stone for foundations, the scarcity of capital, limited extent of business, and the experimental character of the particular investment, will often present arguments in favor of its adoption. At the same time, we are fully of the opinion, that all railroads, which constitute important avenues of communication, the period is not distant when timber rails will be wholly abandoned for iron.

The question in relation to the average cost of railroads, it will be difficult to determine, as the graduation will be very different at different places. The table given, of the cost of several railroads, excluding the Liverpool and Manchester, would afford an average of $30,393 per mile. Had all these roads been constructed entirely with iron rails and stone foundations, their average cost would probably have been between $35,000 and $40,000 per mile. Taking all the railroads, designed to accommodate a large general trade, that have been constructed in this country, and add to their expense what would be required to complete an iron rail with stone foundations, we believe the cost for a double road would not fall below $35,000 per mile; and to reduce the same to a timber road of the best character, would not be less than $25,000 per mile. The grading in both cases, is supposed to be done in a permanent manner. We are aware of the fact, that railroads, in some instances, have been made for much less; but for the reasons before given, we do not believe them entitled to a place in this examination, which is designed to investigate the utility of railroads as a means of general intercommunication of trade. There is no doubt, many situations where the favorable formation of the country, and the facilities for obtaining materials, will reduce the cost below the amount stated above, and a less expensive road may be sufficient for the trade to be accommodated. But there will be others that will be more expensive, as experiences has fully demonstrated; and our object is to reach an average result for the accommodation of a general trade, where expedition, regularity and economy in the moving power will be important. It should be observed in relation to this question, that the cost of a railroad will depend materially on the amount of tonnage, and the speed it is necessary to maintain. This arises from the economy of motive power; for instance, where a small amount of business is to be accommodated, it will be economy to apply greater motive power, and avoid expensive graduation; on the other hand a large amount of trade, will induce a greater expense in bringing the lines of graduation to the most favorable standard for economizing this power.

Remarks in relation to repairs on Railroads.

Experience on this point is yet quite limited. We have the account of two years on the Baltimore and Ohio road, four years on the Delaware and Hudson Company road, and four semi-annual statements of the Liverpool and Manchester road. We have also, in relation to the latter, a general statement of the half year preceding, and the half year subsequent to the four full reports, from which we are led to infer that no material variation occurred for three years. The average of the three roads is $1,040 per mile per annum.

There is a great difference in the annual expense of repairs for these roads, which suggest the propriety of examining into the cause.

The moving power on the Baltimore and Ohio, and also on the Delaware and Hudson Company's road, admitted for freight only a moderate speed, probably seldom exceeding four miles per hour, and nearly the same amount of tonnage was conveyed on each: on the latter, no passengers are carried; on the former, the passengers constitute about half the business.

The Baltimore and Ohio road has less timber in its structure, though it has a large majority of timber road. The Delaware and Hudson Company road is about two thirds single track, and considering the passenger business, has not over half the use, and still its repairs are more than fifty per cent. higher. Two years, with a moderate amount of trade, on a timber road, would not give a fair average of the cost of repairs, and the condition of the two roads at the end of the year, in regard to the age and durability of their timber, may be very different. We are, therefore, led to conclude that further experience will show the repairs on the Baltimore and Ohio road, as the business increases, to be greater than they have hitherto been.

The Liverpool and Manchester road has cost over five times as much for repairs as Baltimore and Ohio, and over three times as much as the Delaware and Hudson Company road. The Liverpool road was made in the most substantial manner, with very little curvature. The Baltimore road is very much curved, which increases the expense of maintaining the parallelism of the rails. The statement of the cost of repairs and maintenance by the directors of the Liverpool road is very explicit, and continued for successive terms with very little variation, leaving no ground to misunderstand the subject. The amount of business, on the Liverpool has been from three to four times as great as on the Baltimore for equal terms of time; and the velocity of traveling, both with freight and passengers, has been also much greater on the former than on the latter. In view of all the facts we have obtained, we are led to the conclusion that the amount of business, and the velocity of traveling, has a material influence on the question of repairs. In the last report, the directors of the Liverpool road, they allude to the expense of maintaining their road on the Whiston and Sutton planes, in consequence of the high velocity which the engines and wagons often obtain in their descent; and propose to lay heavier rails to guard against this inconvenience. In a report recently made to the directors of the London and Birmingham railway, by R. Stephenson, (late engineer of the Liverpool road,) on the propriety of adopting the undulating plan, he urges, as an objection to this plan, the injurious tendency of the high velocities obtained in the descents, to the road, and particularly to the locomotive engine, as a reason that he considers conclusive against it.

The repairs of a railroad composed mostly of timber, will generally be much less for two or three years after it is put into operation, than the average for a term of ten or fifteen years. Our experience is limited in this branch of the investigation, but from the facts we have obtained, we are led to the conclusion that the average expense of repairs for a road designed to accommodate a large general trade requiring a high velocity, will not be less than that stated as the average of these roads, viz.: $1,040 per mile per annum.

Transportation on Railroads.

The cost of transportation (reduced to a level road) on the Baltimore road, we have found to be 3.05 cents per ton per mile, and 4.07 cents per ton per mile on the Liverpool road. In the former case it is done by horse power, in the latter, by locomotive (except on one plane) steam power. The ratio of cost of motive power to the entire cost of transportation is, for the Baltimore road, as four to ten; and for the Liverpool road as three to ten. It therefore appears that the Liverpool road, with ten per cent. less ratio in cost of motive power, (which makes the motive power more nearly equal on the two roads,) cost one third more for entire expense of transportation. If our accounts can be relied on as presenting accurate results, it would appear highly probable the extra expense in repairs and management of the business, was incurred in consequence of the greater speed maintained. Some abatement should doubtless be made for the ratio of difference in expense of loading and unloading, which, in consequence of its being shorter, would bear heavier on the Liverpool road than on the Baltimore. The accounts for the Liverpool transportation are presented in much detail, and are very satisfactory in their character. Those for the Baltimore road are not given in as much fullness and detail, but we have no reason to doubt their accuracy. It further appears that horse power is a little more expensive for motive power, at a low velocity, than locomotive steam at a high velocity, as compared for the two roads. But this would not be the case if the power was reversed for the two roads, as the short ascents on the Baltimore road would greatly depress the economy of steam power. The average cost of transportation on these two roads, when reduced to a level, is 3.56 cents per ton per mile. This allows no profit or toll; the cost stated for the Mohawk and Hudson road is 3.5, and for the Delaware and Hudson Company's road is also 3.5

cents per ton per mile, as the net cost. It may, therefore, be considered that experience thus far has settled the cost at 3½ cents per ton per mile on a level road.

It has been shown in this investigation, that where locomotive steam power is used, it is important to its economy, to have all the inclination reduced to a uniform angle, and the curves to a uniform radius, otherwise the traction that occurs on the sharpest curves, and greatest ascents, will determine the load of the engine. It is obvious that the load of the engine must be regulated by its ability to overcome the greatest resistance that occurs on the road over which it passes, unless extra power is stationed on the line to aid in passing ascents: the inconvenience of stationary power would prevent a resort to this method unless the increased power required, was considerably greater than was generally necessary on the route traveled. This consideration is highly important where a large general trade is to be accommodated, and accounts for the great expense that is often encountered to bring the grade to the most favorable standard.

The cost has been shown to be 3½ cents per ton per mile on a level, and as railroads are not often entirely level, it has been thought proper, to a full understanding of the subject, to present a statement, showing the comparative economy in motive power by locomotive steam engines on roads of different inclinations. In the calculations, the engine is assumed to weigh 6½ tons (13,000 lbs.,) with 7,000 lbs. on its working wheels; adhesion at 10; the weight of the tender at 7,000 lbs.; resistance from friction $\frac{1}{225}$. The load carried is exclusive of the tender, and includes freight and wagons. Two-thirds of the gross load will be tonnage goods.

				Tons.
On a level the gross load will be				75.25
On a road or section having an ascent of		10	feet per mile,	49.53
do	do	20	do	37.35
do	do	30	do	27.24
do	do	40	do	20.22
do	do	50	do	17.04
do	do	60	do	13.92
do	do	70	do	11.31

In the load on a level, we have 50 tons exclusive of wagons, taking the cost of motive power at 40 per cent. of the entire cost of transporation; the total cost at the level being $3\frac{5}{10}$ cts.

			Cents.
The total cost on an ascent of	10 feet	per mile is per ton,	4.20
do	20	do	4.90
do	30	do	5.95
do	40	do	7.28
do	50	do	8.19
do	60	do	9.66
do	70	do	11.41

There are engines of a larger size than the one assumed; but it is the most approved at this time, in reference to the weight of engine, and the weight of the working wheels. This, however, is unimportant, as the comparison will not be at all affected by varying the power of the engine; the ratio between a level and the ascents will remain the same notwithstanding.

COSTS OF CANALS.

We subjoin a table marked A, containing the cost of 50 canals in England; this table gives the name of each canal, the total cost in pounds sterling, cost per mile, length of each canal in miles, lockage in feet, date of completion, original cost for each share, and the value and dividend of each share in 1821, in March, 1828; in November, 1831; in 1833, and on the 21st of October, 1834. Forty-five of these canals, being the most important in England, have an aggregate length of 1,464 miles. We also, subjoin a table of the principal railways, only one, however, of those which are completed and in operation (the Liverpool and Manchester) is calculated for general trade.

In table B, we give a view of the principal canals in this country; it contains all the particulars that we were able to obtain of 40 canals, principally in the northern and middle States. It has the names of the canals, the length of the main trunk and feeders, depth of water, width of surface, number of locks, their length and width, and the aggregate lockage on the canals and feeders, number of dams, date of completion, cost per mile, total cost and the tolls for each, for the years 1833 and 1834.

The information contained in the tables for the canals of this State, was obtained from public records and from documents in the Comptroller's office. That for the Pennsylvania and the other canals, were taken principally from the official reports, and from information derived from the officers having charge of these canals respectively; we have also been assisted in the inquiries by private records and memorandums in our possession.

The Erie canal extends from the Hudson river at Albany to Lake Erie; is 363 miles long and has 689 feet of lockage; the canal is 40 feet wide on the surface, 28 feet wide at the bottom and four feet deep. The locks are 90 feet long, between the gates, 15 feet wide, and built principally of limestone, laid in hydraulic cement, with the front stone cut and laid in courses. Although there is a small amount of elevation, compared with the distance, being but $1\frac{9}{10}$ feet of lockage per mile, there are few places that presented formidable difficulties in the construction; a part of the distance between the Hudson and Schenectady, the rock excavation at Little Falls and the deep cutting in the mountain ridge west of Lockport.

The Champlain canal is the same dimensions as the Erie canal; the locks are constructed in the same manner, except they are 7 feet longer, and one foot less width. This canal is 64 miles long and extends from the junction 9 miles north of Albany to Lake Champlain. The summit is supplied with water from the Fort Edward pond, and by a navigable feeder from the Hudson river, taken out above Glens Falls.

The Glens Falls feeder is 7 miles long, and, with the pond, makes a navigation of 12 miles in length; there is a descent of 132 feet by 13 wood locks.

The Oswego canal is constructed similar to the Erie canal, but has nearly one-half river navigation. The locks are of the same dimensions and quality, except one, which is built of wood.

This canal extends from the Erie canal at Syracuse to Lake Ontario.

The Cayuga and Seneca canal is, with the Cayuga branch, 23 miles long, connects the Erie canal at Montezuma with Seneca lake at Geneva, one-half of which is river navigation. It has 11 wood locks that overcome an elevation of 80 feet. The dimensions of the canal and locks are similar to those on the Erie canal.

The Crooked Lake canal is 8 miles long, connects the Crooked and Seneca lakes, and has 269 feet of lockage; this, although the locks are of wood, is the most expensive of the State canals; the large expenditure is accounted for by the great elevation overcome, and by the difficulties in construction in the narrow rocky valley of the outlet.

The Chemung canal extends from the head of the Seneca lake to the Chemung river; it is 23 miles long, and the summit is supplied by a feeder of 13½ miles in length, from the Chemung river, at the Chimney Narrows, in Steuben county. This canal and feeder, (as also the Crooked Lake canal,) is 42 feet wide on the surface, 26 feet wide on the bottom, and 4 feet deep; the locks are of wood, connected with the upper level by a wall of masonry at the head. The length of navigation, including 2½ miles of pond in the Chemung river above the feeder dam, is 39 miles, with a lockage of 516 feet, and is the cheapest of the State canals.

The Erie canal cost	$19,255 49	per mile.
Champlain	15,520 95	do
Oswego	14,879 93	do
Cayuga and Seneca	10,295 85	do
Crooked Lake	19,597 11	do
Chemung	8,504 96	do

The aggregate cost of the six State canals, paid by the Canal Commissioners for their construction up to the time when they were completed, for the 558 miles of navigation, is $9,692,106.68, being an average cost of $17,367.57 per mile.

The Delaware and Hudson canal extends from the Hudson river, near Kingston, to Honesdale, on the Lackawaxen river, in the State of Pennsylvania. This canal is 108 miles long, 36 feet wide on the surface of the water, and 4 feet deep. The locks are 76 feet long, nine feet wide in the chamber, 110 in number, and overcome an elevation of 1,073 feet; 60 of the locks are of hammered stone masonry, and 50 are composite, of stone and wood.

There was some formidable rock excavation in the valley of the Delaware and Lackawaxen rivers, which increased the expense of construction. The average cost of this canal was $20,665 per mile.

Pennsylvania Canals.

The Pennsylvania State canals are divided into 9 divisions, and they have an aggregate length of 601½ miles. The main line of these canals form a communication in connection with the Columbia and the Portage railroads, between Philadelphia and Pittsburgh. Between these places there are 282 miles of canals, and 119 miles of railway.

The Delaware division extends from Bristol to Easton, 59¾ miles; and in the valley of the Susquehannah, including the west and north branch, there are 183 miles of canal, besides the Beaver and French creek divisions, west of the mountains. These

By the preceding table it appears that 27 of the principal canals of this country, having an aggregate length of 2,210 miles, with 9,748 feet of lockage, embracing many difficulties, and constructed in nine of the United States, in a great variety of locations, have cost $41,122,585.18, or an average of $18,608.41 per mile.

Repairs of Canals.

It appears from the report of the Comptroller, Assembly Document No. 216, of 1835, that the repairs of the State canals, including salaries of superintendents and lock-tenders, have been for the last year as follows, viz:

For the Erie canal, including 14 miles of the Champlain, and the sloop-lock at Troy,	$883	77	pr mile.
Erie and Champlain canal	1,005	03	"
Oswego canal	320	63	"
Cayuga and Seneca canal	401	46	"

The repairs for the last 3 years, ending September 30, 1834, have been annually,

For the Erie and Champlain canal	$826	13	pr mile.
Oswego canal	313	13	"
Cayuga and Seneca canal	339	88	"

And for the last 6 years, from 1829 to 1834, both years inclusive, ending on the 30th September, the repairs have been, annually,

For the Erie canal	$603	76	pr mile.
Champlain canal	681	01	"
Oswego canal	309	19	"
Cayuga and Seneca canal	301	07	"

In the document before alluded to, there is a division of the cost of repairs upon the Erie canal, stated separately, and the amount for the last year is,

For 159 miles, from Buffalo to Montezuma	$600	47	pr mile.
73 miles, from Montezuma to 7 miles west of Rome	660	34	"
146 miles, from 7 miles west of Rome to Albany, including 14 miles on the Champlain and the Troy dam and lock	1,304	04	"
The repairs of the Erie canal in 1829 averaged	493	12	"
" " " 1834 "	883	78	"

Being an average in the cost of repairs, of 79 per cent.

The lockages at the first lock west of Schenectady—

In 1829 were	12
In 1834 were	22

An increase of 80 per cent.

The last results, as do also the comparisons of former yea indicate that the expense of the repairs of the Erie canal increa in nearly the same ratio as the business.

The repairs on the Delaware and Hudson canal, for the last years, ending Dec. 31, 1834, was an average of $527 per mile and for the year 1833, including the salary of superintend and lock-tenders, on the Schuylkill canal, was $710.44 per mile.

Cost of transportation on Canals.

In this inquiry we have selected three canals that have a larg amount of business and those that have their prices well established.

The Erie canal, and the Delaware and Hudson canal in this State, and the Schuylkill in Pennsylvania. We are not able give the items that compose the cost of freighting upon canals with the same certainty as that expense has been reported by the Liverpool and Manchester, and the Baltimore and Ohio railroad companies; but we assume the prices, paid on canals for down freight, upon articles of the greatest tonnage.

The Schuylkill canal in 1833, had 361,054 tons of down freight, of which 250,558 was coal from the mines; and the up freight, consisting of merchandise, plaster, iron ore, &c., amounting to 84,795 tons. The price for the transportation of coal, is one cent per ton per mile, exclusive of tolls.

The Delaware and Hudson canal company, in 1833, sent to market from the mines, 111,777 tons of coal, and the merchandise up, amounted to 9,700 tons. In 1834, the coal sent to the Hudson river, was 45,000 tons. The established price of transportation was $1.12½ per ton; of 2,240 pounds of coal for 108 miles by this canal, from Honesdale to the Hudson river, 1.041 cents per ton per mile.

The property arriving at tide water, by the Erie and Champlain canals, in 1834, as appear from official statements,

Was equal to	553,825 tons.
Passing from tide water	114,608 "
Making an aggregate of	668,433 "

The proportion of down freight or property going to market, is to merchandise or tonnage going from tide water, as $4\frac{83}{100}$ to 1, or as 5 to 1, nearly.

The cheapest prices of freight on the Erie canal, are paid for staves, timber, wood, stone, lime, plaster and salt; the highest charges are for merchandise. We put down the rates, exclusive of tolls, as charged by the different forwarding lines, although goods are frequently taken up the canal by boats unconnected with the lines, at about half those rates; this higher price is intended, besides the cost of freighting, to pay for the risk to which the forwarding merchant is liable as a common carrier.

During the season of navigation last year, there was brought down the canals, 32,670 tons of staves, and we are informed, that the average price of transportation of this article, has been $2 per ton for the last 6 years, from Tonnawanta to Albany, exclusive of tolls. The distance is 352 miles by the canal, and this would give only $\frac{57}{100}$ of a cent per ton per mile.

There was also sent down—

181,016 tons of boards and scantling, at $\frac{74}{100}$ of a cent per mile.
96,642 " of wood " at $\frac{32}{100}$ " "
23,894 " salt, to Buffalo passing Utica, at $\frac{47}{100}$ " "
70,372 " merchandise, " at $2\frac{15}{100}$ " "

Making an average of the above prices, of $\frac{95}{100}$ of a cent per mile for a ton of 2,000 pounds.

Flour is a large item of the down freight; there is about 120,000 tons sent to market annually, and this, together with provisions, may be taken as a standard of comparison.

Flour has been carried from Rochester to Albany, 269 miles, by transient boats, as low as 18 or 20 cents per barrel, exclusive of tolls; we are informed, however, that contracts for freight to a large amount, have been made by millers at Rochester, with the established lines of forwarding merchants, for the ensuing year, at 24 cents per barrel, from the first of June to the first of October; before and after those periods, at 30 cents per barrel for flour, exclusive of tolls.

For this comparison we will take an average between these two prices, which is 27 cents per barrel, and this is believed to be about the average price paid for freight on the whole tonnage of the Erie canal during the season of navigation.

At the above rates the prices of transportation on the three canals, exclusive of tolls, would be, for a ton of 2,240 pounds, as follows, viz:

On the Erie canal	1.04	cents per ton per mile,
On the the Delaware and Hudson	1.041	" " "
Schuylkill	1.00	" " "

or an average of a little over one cent per ton per mile, on the three canals.

For a more perfect comparison of the cost of transportation, we will reduce these canals to a level, by an allowance of 20 feet of lockage on the Erie and Schuylkill, as equal to a mile of distance, and in consequence of the less crowded navigation, of 30 feet to the mile on the Delaware and Hudson canal.

The distance on the Erie canal from Rochester to Albany, is 260 miles and the lockage 626 feet, and reduced to a level would be equal to $300\frac{8}{10}$ miles.

The Schuylkill canal is 108 miles long, and 588 feet of lockage, and reduced to a level in the above mentioned ratio, is equal to $137\frac{4}{10}$ miles.

The Delaware and Hudson is 108 miles long, and has 1,073 feet of lockage, and is equal to $135\frac{8}{10}$ miles of level canal.

On a level canal, the prices of freight would be for the

Erie canal	$\frac{828}{1000}$	of a cent per ton per mile,
Schuylkill	$\frac{785}{1000}$	" " "
Delaware and Hudson	$\frac{766}{1000}$	" " "

and the average price of the three canals would be, without toll, $\frac{937}{1000}$, or a little less than $\frac{8}{10}$ of a cent per ton per mile.

In Hazard's Register, vol. 15, page 112, it is stated that the Lehigh, the Delaware, and Delaware and Raritan canals paid last year $\frac{1}{10}$ of a cent per ton per mile, for the transportation of 105,000 tons of coal; the contractor finding everything, except paying the tolls.

GENERAL REMARKS.

Having presented such facts as are within our knowledge, with the circumstances connected with them; together with such explanations of principles, as appeared to us necessary to a correct understanding of the subject in its practical character, we have not thought it would aid in the object of enquiry, to attempt any precise ratio of comparative cost of construction or repairs, between canals and railroads: the reason for this is to be found in the obvious modification to which any ratio must be exposed, in the varied local circumstances that will be encountered in the progress of improvements of this character, and whose tendency would render any ratio of little or no practical value. We, therefore, refer to the several statements, and particularly the tabular views, for information, which we believe when applied to any known case, will afford some useful hints in regard to the relative merits of the two different modes of facilitating internal communication: We may, however, be permitted to state, what appears conclusive from the facts presented, that canals, on the average, have thus far, cost less than railroads, both in their construction and repairs.

In regard to their relative merits as affording the means of transportation, there is less difficulty in reaching an approximate ratio. In reducing them both to a level, we attain for general purposes, a fair standard of comparision. Taking the facts we have obtained as a basis, we find the relative cost of conveyance is, as 4.375 to 1, a little over four and one-third to one, in favor of canals: this is exclusive of tolls or profits. If the cost of construction, the annual cost for repairs, and the amount of tonnage were the same on a canal as on a railroad, then the same rate of toll would produce the same rate of profit on each. Our examinations have shown, as before stated, that railroads in the average, cost more than canals, both in their construction and repairs. But for comparison, we assume a case in which they are equal, and charge the same toll. The average tolls on the Erie canal are less than one cent per ton per mile: assuming an average toll of one cent per ton per mile, the ratio of the entire cost of transportation and toll is, as (2.5 to 1,) two and a half to one, in favor of canals. In the preceding computations, the cost of transportation on railroads is the net cost, as reported by railroad companies, allowing no profit on this business, while the charges on the canals are at contract prices, which are supposed to yield a profit to the carrier. The cost of transportation on canals, as previously stated, is the average on the Erie canal, the Delaware and Hudson canal, and the Schuylkill canal; on the two latter, the cost of transporting coal only is known; and the total average of the three canals is almost exactly the same as the average price for the several different articles transported on the Erie canal. The preceding calculations are confined to a velocity not much exceeding 50 or 60 miles in 24 hours. We have not instituted any investigation to show the relative economy in high and low velocities. For the conveyance of freight, we are of the opinion, canals are not well adapted to any material increase of speed beyond three miles per hour; and as the speed on half of the railroads embraced in this computation, is from ten to fifteen miles per hour, we may consider this comparison as nearly similar to one of high velocity on railroads, and low velocity on canals. And goods that can afford to pay the difference above indicated, for the saving of time, would hold the two kinds of conveyance in equilibrium. The amount that would find so great an object in the saving of time, in comparison to the total quantity requiring transportation, it is believed would be small. In relation to the conveyance of passengers, the saving of time is highly important, and the railroad becomes eminently the superior method of communication. We are therefore led to the conclusion that in regard to the cost of construction and maintenance, and also in reference to the expense of conveyance at moderate velocities, canals are clearly the most advantageous means of communication. On the other hand, where high velocities are required, as for the conveyance of passengers, and under some circumstances of competition, for light goods of great value, in proportion to their weight, the preference would be given to a railroad.

It may be observed in favor of railroads, that they admit of advantageous use in districts where canals, for the want of water, would be impracticable. This advantage often occurs in mining districts, and sometimes, for general trade, where it is necessary to cross dividing ridges at a level too high to obtain water for their summits.

The facts and reasonings presented, we believe, clearly show that both canals and railroads are highly important means of internal communication; that each has its peculiar advantages, and will predominate according to the character of the route, and the trade for which it is intended to provide.

Respectfully submitted,

JOHN B. JERVIS,
HOLMES HUTCHINSON,
FREDERICK C. MILLS,
Civil Engineers.

Albany, 14*th March*, 1835.

COMPARISON OF RATES OF TRANSPORTATION.

	Ton of 2,000 *pounds.*	
	Price per ton per mile. cts. mills.	Cost if carried 200 miles.
Prices of transportation during the years 1817, 1818, 1819, by teams from Albany to Buffalo, (usual rates, $4.25 pr cwt.,)	29.3	$58 60
Rates of 1835, (including tolls,):		
By Erie canal—		
For merchandise,	3.95	7 90
flour,	1.83	3 66
staves,	0.97	1 94
salt,	0.93	1 86
Baltimore and Ohio railroad—		
Down freight,	4.0	8 00
Up do	6.0	12 00
Liverpool and Manchester railroad—		
For merchandise,	7.5	15 00
Hudson river, 145 miles—		
Heavy goods, (from N. Y. to Albany, 10 cts. per 100 lbs.)	1.38	2 76
Light do 20 do do	2.76	5 52
Provisions, &c., 7 do do	0.96	1 92
Lake Ontario—		
Merchandise, (from Oswego to Lewiston, 146 miles. 20 cts. per 100 lbs. all kinds,)	2.74	5 48
Lake Erie—		
Merchandise, (from Buffalo to Cleveland, 190 miles, 23 cts. per 100 lbs.) for heavy goods,	2.42	4 84
29 cts. per 100 lbs. for light goods,	3.00	6 00

(A.)

Description and cost of certain Canals and Railroads in England, and the prices of stock at various periods.

NAMES OF THE SEVERAL CANALS, RAILROADS AND LINES OF NAVIGATION.	Total cost in pounds sterling.	Costs per mile.	Length of each canal in miles.	Lockage in feet.	Date of completion.	Original cost of each share in pounds sterl'g.	Price of each share in 1821.	Dividend on each share at that time.
Ashton and Oldham	£172,920¾	£15,720	11	152	1796	97⅞		
Ashby de-la-Zouch	167,466	4,186	40			113		
Barnsley	97,000	6,466	15	120	1812	160	£300	£13 0 0
Birmingham	115,000	5,111	22½	204	1772	100	203	12 10 0
Bridgewater			40	82	1776			
Chesterfield	160,000	3,478	46	380	1776	100	150	8 0 0
Coventry	120,000	4,444	27	96	1790	100	1,200	44 0 0
Cromford	80,000	4,444	18	80	1794	100	400	19 0 0
Chelmer and Black Water	40,000	3,077	13			100		
Derby	90,000	10,000	9	78	1794	100	150	7 10 0
Dudley	206,075	15,852	13		1797	100		
Ere wash	23,100		11¾	108¾	1797	100	1,400	72 0 0
Ellsmere and Chester	400,000	7,017	57			133		
Forth and Clyde	421,525	12,043	35	321	1790	100	570	25 0 0
Glamorganshire	60,000	2,400	25	300		100	250	13 12 8
Grand Junction	2,000,000	21,390	93½	796	1805	100	307	13 0 0
Grantham	124,000	3,348	33¾	140	1799	150	215	9 0 0
Grand Derbentures						100		
Grand Union	284,950					100		
Kennet and Avon	420,000	5,384	78	263	1801	39⅞		
Leeds and Liverpool	600,000	6,153	130	841	1774	100	395	16 0 0
Leeds and Liverpool, new	200,000					80		
Leicester	84,000	3,907	21½	230		100	325	17 0 0
Lancaster	614,000	8,105	75½	287	1803	47½		
Leicester and Northampton	300,000	6,857	43¾	307¼		83¼		
Loughborough	7,000	736	9½	41	1776	100	4,000	200 0 0
Melton and Mowbray	41,000					100	240	11 0 0
Mersey and Erwell	50,000	1,000	50			100	825	35 0 0

Monmouthshire	275,330	15,512	17¾	1,057	1796	100	215	10	0	0
Monkland	10,100	841	12	96	....	100	....	....		
Montgomeryshire	92,000	3,407	27	....	....	100	....	....		
Neath	35,000	2,500	14	....	1798	100	350	15	0	0
Nottingham	75,000	5,000	15	....	1802	150	290	12	0	0
Oxford	330,000	3,473	91¼	269	1790	100	670	32	0	0
Peak Forest	150,000	6,521	23	....	1800	78	....	....		
Regents or London	400,000	57,143	7	90	....	33⅞	....	....		
Rochdale	291,900	8,842	33	613¼	....	85	....	....		
Shrewsbury	70,000	4,000	17¼	155	1797	125	210	10	0	0
Shropshire	47,500	6,333	7¼	453	1792	125	135	7	0	0
Somerset Coal	185,000	10,571	17½	138	1802	50	170	10	0	0
Somerset Lock Fund	45,000	....	....	....	....	12½	....	....		
Stafford and Worcester	100,000	2,150	46¼	394	1772	140	800	40	0	0
Stourbridge	30,000	6,000	5	191	1776	145	220	12	0	0
Stroudwater	20,000	2,500	8	108	1796	150	450	23	0	0
Swansea	90,000	5,142	17½	366	1798	100	280	12	10	0
Trent and Mersey	334,250	3,594	93	778	1772	100	820	37	10	0
Warwick and Birmingham	180,000	7,200	25	....	1799	100	265	12	0	0
Warwick and Napton	130,000	8,666	15	....	1799	100	205	12	0	0
Wyrley and Essington	160,000	6,956	23	288	1794	125	160	6	0	0
Worcester and Birmingham	470,250	16,215	29	428	....	78⅞	....	....		
COST OF RAILWAYS IN ENGLAND AND PRICES OF STOCK AT SAME DATES.										
Cromford and Peak Forest	168,707	5,191	32¾	1,800	1831	100	....	....		
Canterbury	....	....	....	....	....	50	....	....		
Cheltenham	....	....	....	....	....	100	....	....		
Croydon	....	....	....	....	1803	65	....	....		
Clarence, (Durham)	....	....	....	....	....	100	....	....		
Forest of Dean	....	....	....	....	....	50	....	....		
Grand Junction	....	....	....	....	....	20	....	....		
Jersey	....	....	....	....	....	60	....	....		
London and Greenwich	....	....	....	....	....	4	....	....		
Leicester and Swanington	....	....	....	....	....	50	....	....		
Liverpool and Manchester	....	....	....	....	1830	100	....	....		
do do	1,089,813¾	....	31	379	....	25	....	....		
do do	....	....	....	....	....	-25	....	....		
London and Birmingham	....	....	....	....	....	5	....	....		
Monmouth	....	....	....	....	....	50	....	....		
Severn and Wye	....	....	....	....	....	50	....	....		
Stockton and Darlington	130,000	5,200	25	....	....	100	....	....		
St. Etienne and Lyons*	1,370,954 19	$40,086 38	34½	....	1831					

A.—Continued.

NAMES OF THE SEVERAL CANALS, RAILROADS AND LINES OF NAVIGATION.	Price of the same in March 1828.	Dividend at the same time.	Price of each share Nov. 1, 1831.	Dividend at the same time.	Price of each share in 1833.	Dividend at the same time.	Price of each share, October 21, 1834.	Dividend at the same time.
Ashton and Oldham					£160	£6 0 0	£160	£6 0 0
Ashby de-la-Zouch					74	4 0 0	65	4 0 0
Barnsley			£210	£10 0 0	290	13 0 0	272	13 0 0
Birmingham	£565	£20 0 0	244	12 10 0		12 10 0	235	12 10 0
Bridgewater								
Chesterfield	120	8 0 0	170	8 0 0				
Coventry	999	44 0 0	750	50 0 0	610	32 0 0	806	42 0 0
Cromford			410	19 0 0				
Chelmer and Black Water					102	5 0 0	102	5 0 0
Derby			120	6 0 0				
Dudley					60	2 10 0	67	3 5 0
Ere wash	1,600	58 0 0	600	54 0 0				
Ellsmere and Chester					80	3 15 0	87	3 15 0
Forth and Clyde			600	27 0 0	560	25 0 0	560	25 0 0
Glamorganshire			290	13 12 8	290	13 12 4	290	13 12 4
Grand Junction	218	9 0 0	235	13 0 0	241	12 0 0	242	12 0 0
Grantham			195	9 0 0	202	10 0 0	202	10 0 0
Grand Derbentures						5 0 0	76	4 0 0
Grand Union					23	1 0 0	23	1 0 0
Kennet and Avon					28½	1 5 0	25½	1 5 0
Leeds and Liverpool	278	10 0 0	405	20 0 0	452½	20 0 0	515	20 0 0
Leeds and Liverpool, new								16 0 0
Leicester	260	10 0 0	211	17 0 0	185	13 0 0	170	12 0 0
Lancaster					27	1 0 0	25	1 0 0
Leicester and Northampton					82	4 0 0	82	4 0 0
Loughborough	2,400	119 0 0	2,550	180 0 0	1,820			136 0 0
Melton and Mowbray	170	8 10 0	190	2 10 0	190	9 0 0	200	10 0 0
Mersey and Erwell	650	30 0 0	525	40 0 0	720	40 0 0		40 0 0
Monmouthshire			208	12 0 0		10 0 0	191	11 0 0
Monkland			90					
Montgomeryshire					86	4 0 0	60	4 0 0

Neath			300	18 0 0			300	15 0 0
Nottingham			245	12 0 0				
Oxford	640	32 0 0	510	32 0 0		32 0 0	610	32 0 0
Peak Forest					71	8 0 0	90	3 10 0
Regents or London					17	0 13 6	17	0 13 6
Rochdale						4 10 0	124¼	4 10 0
Shrewsbury			205	11 0 0	255	11 0 0	205	11 0 0
Shropshire			140	8 0 0	136	7 10 0	106	7 10 0
Somerset Coal			160	10 10 0		10 0 0	170	10 0 0
Somerset Lock Fund					13	6 5 0	13	
Stafford and Worcester	642	40 0 0	155	36 0 0	600	34 0 0	645¼	36 0 0
Stourbridge			220	11 0 0	200	8 0 0		8 0 0
Stroudwater			480	23 0 0	525	24 0 0	525	24 0 0
Swansea			203	15 0 0	220	11 0 0	215	12 0 0
Trent and Mersey	900	75 0 0	620	37·10 0	660	37 10 0	640	32 10 0
Warwick and Birmingham	210	11 0 0	230	12 0 0	280	16 0 0	280	14 0 0
Warwick and Napton	235	10 0 0	210	12 0 0	210	12 0 0		
Wyrley and Essington			115	6 0 0	115	6 0 0	80	
Worcester and Birmingham					87½	4 0 0	86	4 0 0

COST OF RAILWAYS IN ENGLAND, AND PRICES OF STOCK AT SAME DATES.

Cromford and Peak Forest								
Canterbury	25		35				40	
Cheltenham	78		78					
Croydon								
Clarence, (Durham)			65		100		70	
Forest of Dean	45	2 16 0	33	2 4 0	25	1 2 0		0 19 0
Grand Junction							20½	
Jersey								
London and Greenwich					4		7¾	
Leicester and Swanington					57		58	
Liverpool and Manchester			205	8 0 0	210	8 4 0	199	9 0 0
do do					51½		48½	
do do					51		48¾	
London and Birmingham					13¾		15¾	
Monmouth								
Severn and Wye	23	1 11 0	117	0 17 0	16¼	0 17 4	19¼	1 0 0
Stockton and Darlington	160	5 0 0	230	6 0 0	297½	8 0 0	250	8 0 0
St. Etienne and Lyons*								

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* In France. Has 14 tunnels, one a mile in length, another 2,990 ft. under the river Degier; one bridge over the Soane, cost 17,000 francs. Wrought iron rails, chains cast, supported in stone blocks, Clarence rail. The fractional parts of a £ in the column of cost per mile omitted.

Remarks.

Ashton and Oldham.—The summit pond is six feet deep and serves as a reservoir.

Ashby de-la-Zouch.—Two tunnels, one of 700 and the other 200 yards in length.

Birmingham.—Two tunnels. one of 1,000 and one of 2,078 yards in length—184 under the hill.

Bridgewater.—Tunnel of 18 miles in Worsley hills; estimated £168,960; profits of canal, 50 to £80,000.

Chesterfield.—Two tunnels, one of 2,850 and one of 153 yards in length.

Coventry.—Connected with the summit level of this canal is the longest level in England, 82 miles, including side branches.

Cromford.—Tunnel of 3,000 yards in length, cost £7 per yard; there are several other tunnels; three reservoirs.

Derby.—Cast iron aqueduct.

Dudley.—Three tunnels, one of 3,776, one of 2,926 and one of 623 yards in length.

Ere wash.—Supplied by reservoirs.

Ellsmere and Chester.—Two tunnels, one of 775 and one of 487 yards long. Pont Cysylty cast iron aqueduct 320 feet long, on stone piers 52 feet apart, and the highest 125 feet.

Forth and Clyde.—Two reservoirs, 70 and 50 acres, 22 and 24 feet deep.

Grand Junction.—Five reservoirs for supplying canal; two tunnels, one of 3,080 and one of 2,045 yards in length.

Grantham.—Wholly supplied by reservoirs.

Leeds and Liverpool.—Two tunnels, one of 1,030 yards in length.

Lancaster.—Two tunnels about 800 feet long; aqueduct, five arches, 51 feet high, 70 feet span each; one level 42½ miles long.

Leicester and Northampton.—Four tunnels, 1,056,990,880 and 286 yards in length.

Melton and Mowbray.—Navigation.

Mersey and Erwell.—Navigation.

Monmouthshire.—Railway with inclined planes.

Oxford.—One steam engine, 100 horse power; three tunnels, 1,188, 125—— yards long; three reservoirs on the summit. The summit pond is six feet deep, and also serves as a reservoir.

Peak Forest.—Aqueduct 360 feet, arches 100 feet high; inclined plane 515 yards in length, 204 feet fall.

Rochdale.—Tunnel 70 yards in length, and deep cut of 50 feet in rock; one steam engine and two reservoirs, (one of which is 14 feet deep,) to supply the summit pond. Shrewsbury has one double inclined plane 223 yards in length, 75 feet rise. One tunnel 970 yards in length.

Shropshire.—Three inclined planes, of 207, 126 and 120 yards long, no locks, summit supplied with two reservoirs above, and by steam engines from two other reservoirs below summit.

Somerset Coal.—Upper pond supplied by steam engines.

Stafford and Worcester.—Three short tunnels and two reservoirs for supplying canal.

Stourbridge.—Summit supplied by a reservoir.

Stroudwater.—Has no towing-path.

Trent and Mersey.—Tunnel of 2,888 yards in length; the first canal tunnel in England, and cost £3 10s. 8d. per yard run. There are four other tunnels, 1,241, 572, 350 and 130 yards long, and five reservoirs.

Warwick and Birmingham.—Tunnel, 300 yards in length.

Worcester and Birmingham.—Supplied by steam engine and reservoir; one tunnel of 2,700 yards in length; four others of 500, 400, 120 and 110 yards long.

Cromford and Peak Forest.—Has nine inclined planes, overcomes 1,800 feet rise and fall. Several tunnels, one of 1,590 yards in length. The cast rails weigh 63 lbs. per yard.

Liverpool and Manchester.—Cost including carriages, engines, warehouses, &c.

Stockton and Darlington.—From the river Tees to Darlington coal mines, the expense is exclusive of branches, the cost of land and their charter. These cost about £25,000.

(B.)

Description, cost, tolls, &c., of various canals in the United States.

NAMES OF CANALS.	Dimensions.											
	Length of main canal.	Length of navigable feeders and side cuts.	Total length, including feeders.	Depth of water.	Width of surface.	No. of locks.	Length of locks.	Width of locks.	Lockage on main canals.	Lockage on feeders and side cuts.	No. and feet of dams.	When completed.
1. NEW YORK CANALS.												
Erie	363	8	371	4	40	84	90	15	689	......	......	1825
Champlain	64	......	79	4	40	21 5g.	97	14	163¼	......	No. 4 4,900	1824
Glens Falls feeder	......	12		4	30	13	97	14	......	132	1 800	1829
Side cut at Waterford	......	......		4	40	3	97	14	......	35	......	......
River navigation above Troy dam	......	3		......	......	1	130	22	......	9	1 1,200	1824
Oswego	38	......	38	4	40	14	90	15	123	......	8 5,667	1828
Cayuga and Seneca	21	2	23	4	40	11	90	15	73	7	......	1828
Chemung	23	16	39	4	42	53	90	15	488	28	1 630	1833
Crooked Lake	8	......	8	4	42	27	90	15	269	......	1 50	1833
Totals	......	......	558	......	......	......	......	......	1,805¼	211	......	......
Chenango	97	......	97	4	42	109	90	15	1,021	......	......	......
Constructed by an incorporated Co.												
Delaware and Hudson	108	......	108	4	36	110	76	9	1,073	......	......	1828
2. PENNSYLVANIA CANALS.*							95					1830
Delaware division	59¾	......	59¾	5	40	23		11	164	......	......	
Eastern division	43	......	43	4	40	......	90	17	 682	......	1 1,998	1831
Juniatta division	128	4½	132½	4	40	......	90	15 ri. 17	......	......	4 2,250	1830

Western division	105		108½	4	40		90	15	444			1830
Feeder above Johnstown		1¼										
Susquehanna division	39		39	4½	43		90	17	87			1831
West Branch division	25¾		25¾	4	40	61. 1g.	90	17	41			1830
North Branch division	55¼		55¼	4	40	71. 1g.	90	17	88			1830
Wyoming division	17	¼	17¼	4	40		90	17	43			1832
Lycoming (or West branch)	41¾	4¼	46	4	40	14	90	17	90	21		
Beaver	30¾		30¾	4	40	18	90	18	144½		7	
Franklin Line	22¼		22¼	4	40							
French Creek division	23½		23½	4	40	171. 4g.	90	18	128½			
Totals			601½						1,912¼	21		
Constructed by incorporated Co's.												
Schuylkill	108		108	4	36	921. 28g.	80	17o 8½	588		31	1825
Union	80	24	108	4	36	91	75	13¼	503¼	16		1828
Railroad		4										
Lehigh	46¾		46¾	5	60	471. 6g.	100	22	360⅞		8	1829
Conestoga Navigation	18		18				100	22				
Totals			280¾						145,237	16	39	
3. OHIO CANALS.												
Ohio (Main Trunk)	308¼	25¼	400	4	40	152	90	15	1,207⅛	52⅔		1832
	Side cut.											
Miami	66	¼		4	40	32	90	15	297			1832
Totals	374¼	25¾	400			184			1,504⅓	52⅔		
Constructed by incorporated Co's.												
4. KENTUCKY.												
Louisville and Portland	2		2		200	31.	183	50	24			1831
						1g.	190	50				
5. MARYLAND.												
Chesapeake and Ohio	5 60 44	To Little Falls. Harp's Ferry .. Total.....	109	7 6 5	80 60 50	441. 4g.	100	15	353		5	1834
6. VIRGINIA.												
James and Jackson rivers	30½		30½	3½	40							1825
Irish Falls	7		7	3½	40				96			1825

***Total amount of tolls received on Pennsylvania State canals, including 118¾ miles railroad, during the fiscal year of 1833 (as per Canal Commissioners' report of 1834), is $151,419.69. For 1834, the total amount is $322,535.08.**

B.—Continued.

NAMES OF CANALS.	Dimensions.											
	Length of main canal.	Length of navigable feeders and side cuts.	Total length, including feeders.	Depth of water.	Width of surface.	No. of locks.	Length of locks.	Width of locks.	Lockage on main canals.	Lockage on feeders and side cuts.	No. and feet of dams.	When completed.
VIRGINIA.—Continued.												
Dismal Swamp	22¼	*5										
Lake Drummond (feeder)			27¼	6¼	40		100	22	33			1822
	60	5	65									
7. SOUTH CAROLINA.												
Santee canal	22		22	4	32	13	60	10	103			1802
8. DELAWARE.												
Chesapeake and Delaware	14		14		66	21. 2 tide.	100	22	24			1829
9. NEW JERSEY.												
Delaware and Raritan	43											
Feeder to said canal		22	65	7	75	141. 1g.	110	24	116		1	1834
				6	50				10¼			
Morris canal	101		101	4	32	24 locks. 23 plains.	75	9	223 1,334		5	1832
	144	22	166						1,683			
10. NEW ENGLAND.												
Cumberland and Oxford	20¼		20¼	4	34	26	80	10	260			1829
Blackstone	45		45	4	34	48	80	10	451 6-10			1828
Middlesex	27		27	3	30	20	75	12	136			1808
Farmington	58		78	4	36		80	12	218			1828
Hampshire and Hampden	20								298			1833
Totals			170¼						1,363 6-10			

* Not navigable.

B.—Continued.

NAMES OF CANALS.	Cost per mile.	Total cost.	Tolls in 1833.	Tolls in 1834.	Total amount of tolls received.
1. NEW YORK CANALS.					
Erie	$19,255 49	$7,143,789 86	$1,290,136 20	$1,179,744 97	
Champlain Glens Falls feeder Side cut at Waterford River navigation above Troy dam	15,520 95	1,257,604 26	132,559 02	115,211 89	$10,535,613 19
Oswego	14,879 93	565,437 35	22,950 47	22,168 02	105,708 08
Cayuga and Seneca	10,295 85	236,804 74	17,174 69	18,130 43	83,029 55
Chemung	8,504 96	331,693 57	694 00	3,378 05	4,072 05
Crooked Lake	19,597 11	156,776 90	200 84	1,473 40	1,674 24
Totals		$9,692,106 68	$1,463,715 22	$1,340,106 76	$10,730,097 11
Chenango	$20,210 87	$1,960,456 28			
	20,665 00	2,231,820 00			
Constructed by an incorporated Co.					
Delaware and Hudson					
2. PENNSYLVANIA CANALS.					
Delaware division	$20,720 12	$1,238,027 69			
Eastern division	29,854 26	1,283,733 46			
Junietta division	18,830 17	2,490,290 13			
Western division	25,088 51	2,758,937 71			
Feeder above Johnstown		64,255 00			
Susquehanna division	26,647 60	1,039,256 77			
West Branch division	16,379 45	421,771 00			
North Branch division	19,732 94	1,096,178 34			
Wyoming division	20,164 50	342,796 55			
Lycoming (or West Branch)	28,876 01	1,205,573 77			
Beaver	15,492 08	476,401 48			

Pennsylvania Canals.

Delaware Division.—From Bristol to Easton; beside the lift locks on main line, there are 2 guard and 1 outlet lock (at Easton) and a tide lock at Bristol; the locks are of stone, laid in cement, and faced with timber and plank.

Eastern Division.—From Columbia to Duncan's Island; a dam at said island 1,998 ft. long, 8½ ft. high; cost $18,421.60; has 19 aqueducts, 1 of which is cast iron; locks of stone.

Junietta Division.—From Duncan's Island to Hollidaysburg; has 35 lift locks, 3 guard, 1 outlet and 4 river locks below Huntington; there are 4 dams, and in all about 15 miles slack water navigation.

Western Division.—From Johnstown to Pittsburg; the Portage railroad (36¾ miles) connects this division with the Junietta division; has 2 expensive aqueducts, and a tunnel over 1,000 feet in length.

Susquehanna Division.—From Duncan's Island to Northumberland.

West Branch Division.—From Northumberland to above Muncy rapids.

North Branch Division.—From Northumberland to Nanticoke dam.

Wyoming Division.—From Nanticoke dam to the Wilksbury and Lackawana coal beds.

Lycoming (*or West Branch*).—From Muncy to Bald Eagle; has 2 side cuts; the Bald Eagle side cut at the northerly termination of said canal, is 3¾ miles long, and the Lewisburgh side cut, which has 21 ft. lockage by 3 locks, is ½ mile long.

Beaver.—From Ohio river to Newcastle in Mercer county; two-thirds slack water navigation up Beaver and Chenango creeks.

Franklin Line.—From Franklin on the Allegany to French creek feeder, has 17 miles of slack water navigation; the outlet lock at Franklin is 22 ft. wide and 120 ft. long.

French Creek Division.—Connects the Franklin line with the Conneaut lake.

N. B.—Average cost per mile of the above State canals, is $22,113.44.

Schuylkill.—From Philadelphia to Mount Carbon; it has 1 reservoir 41 ft. deep, and 1 tunnel of 450 ft. in length; 46 miles of slack water navigation; the total cost of the work, including improvements, up to 1st Jan., 1830, is $2,336,380.

Union.—From the Schuylkill to Middletown on the Susquehanna; it has 1 tunnel 243 yds. long, 18 by 14 ft., 3 reservoirs, and 2 engines, 100 horse power each, for supplying the summit level; one of the reservoirs has an embankment and dam 50 ft. high, contains 1,000 ac.

Lehigh.—From Easton to Mauch Chunk; has 9¾ miles slack water navigation; the 4 locks nearest Mauch Chunk are 30 feet wide by 130 ft. long; the others, as noted in the table, 2 of which are used as guard locks; locks of stone in cement, faced with timber and plank; also, 4 aqueducts and 22 culverts. In 1833 there was shipped on this canal, from Manch Chunk, 122,928 tons of coal.

Canastoga navigation.—Extends from Safe Harbor on the Susquehanna river to Lancaster, and is effected by a series of locks and dams.

N. B.—The 3 first canals, viz: Schuylkill, Union and Lehigh, average $20,377.36 per mile; including the Canastoga navigation, the average cost is $19,315 per mile.

Ohio Canals

Ohio (*Main Trunk*).—Main trunk from Lake Erie to the Ohio river at Portsmouth; it has 9 guard locks, 4 feeders on the Cuyahoga summit, and 1 reservoir, formed by three small lakes, containing 350 acres, and 1 side cut, and 1, principally artificial, of 2,000 acres, 6 ft. deep, on the Licking summit. The Miama canal extends from Cincinnati to Dayton. Upon these improvements are 22 aqueducts, 182 culverts of stone masonary, and 60 of wood, and 9 dams for crossing streams, and 12 feeder dams; locks of stone, cut; the Ohio river at Portsmouth is 413 feet below the Licking summit, 49 ft. below Portage summit, 96 lower than Lake Erie, 98 lower than the mouth of the Muskingum, and 468 feet above the tide at Albany.

CONSTRUCTED BY INCORPORATED COMPANIES.

Kentucky.

Louisville and Portland.—Around the falls of Ohio; is intended for steamboats of the largest class; the guard and lift locks are combined; walls are 20 ft. high, except the guard lock, which is 42 ft. high, and corresponds with the height of the banks; the entire length of the walls is 921 ft., containing 34,075 perches of masonry, 21,775 perches of which are in the guard lock; there are, also, 3 stone culverts and 2 bridges, 1 of stone, 240 ft. long, with an elevation of 68 ft., 3 arches, and contains 5,741 perches of mason work; the other is a pivot bridge over the head of the guard lock, and is of wood, 100 feet long, with a span of 52 ft. Total amount of mason work, 41,982 perches, equal to about 30 common canal locks.

Maryland.

Chesapeake and Ohio.—From Tiber creek in Washington city, to a point 8 miles west of Williamsport; the distance remaining to be completed to Pittsburg, is 233 miles; the total amount of lockage is 3,158 ft.; on the first 48 miles (to Point of Rocks) the lockage is 217 ft. by 27 locks; pivot bridges have been substituted for permanent ones, in order to avoid annoyance in the conveyance of passengers; there are, also, 4 aqueducts, No. 1 Seneca, cost $22,784; No. 2, Monocacy, 9,788 perches, cost $125,000: No. 3, Catoclin, cost $33,500; No. 4, Antietam, $22,850; total cost, $204,134; and 151 culverts, which cost from $3.50 to $5.50 per perch of 25 ft.; the canal has 5 principal feeders from the Potomac, and 4½ miles slack water navigation; locks of cut stone. The total cost of this work (342 miles), as estimated by United States engineers, $22,375,427.69; estimated by Geddes and Roberts, $9,347,408.69.

Virginia.

James and Jackson Rivers.—From basin at Richmond to a fall in Goveland county.

Irish Falls.—Around Irish falls to the mouth of the North branch, on James river.

Lake Drummond (feeder).—From Chesapeake bay to Albermarl sound; part in Virginia and part in North Carolina; its dimensions have since been enlarged; every other ¼ of a mile the canal is widened to 60 ft. for turn-out stations; the summit is 16½ ft. above the Atlantic at half tide, and is supplied by a feeder of 5 miles in length from Lake Drummond; the basin at Deep creek is ½ mile long, and 15 ft. above tide.

South Carolina.

Santee canal.—From Santee to Cooper's river, by means of Dreln and Louck's canals, Saluda and Broad rivers, and Saluda acd Columbia canals, navigation is continued from Santee river to Columbia. Winyaw canal unites Santee river with Winyaw bay; length 10 miles.

Delaware.

Chesapeake and Delaware.—It connects the Delaware river, with the Chesapeake bay, and is partly in Delaware and partly in Maryland; at Delaware city a harbor extends 500 ft. along the shore, from which 2 piers, that distance apart, project 250 feet into the river nearly opposite Fort Delaware; has a deep cut of 76 ft. deep, at the summit of which a bridge is constructed over the canal 80 ft. high, 280 ft. span; locks of cut stone.

New Jersey.

Delaware and Raritan.—From New Brunswick to Lamberton: the water to supply this canal is conducted on to the summit by a navigable feeder 22 miles long, extending from Eagle Island on the Delaware to its junction with the main canal at Trenton: locks of stone, cut; canal calculated for 1 ft. additional depth.

Morris canal.—From Jersey city on the Hudson to the Delaware river opposite Easton, Penn., where it connects with the Lehigh canal; there are, also, connected with this canal 4 guard locks, 5 dams, 30 culverts, 12 aqueducts, and more than 200 bridges; the water to supply this canal is obtained from Hopatcong lake, 900 ft. above tide; locks af stone, uncoursed hammer work; 13,000 tons coal transported through this canal in 1833.

New England.

Cumberland and Oxford.—From Portland to the head of Long pond in Oxford county; locks of wood; a lock is constructed in Songo river, by which navigation is continued into Brandy and Long ponds, making the whole water communication 46 miles; has 1 guard lock and a dam across the outlet of Sabago pond.

Blackstone.—From Worcester, Mass., to Providence, R. I.; locks of cut stone; canal supplied with water by 7 reservoirs, having a total area of 4,600 acres, of an average depth of 6 ft.

Middlesex.—From Boston to Merrimack river near Lowell; locks principally of wood.

Hampshire and Hampden.—From Newhaven, Ct., to Northampton, Mass.; locks of wood; at its commencement in New Haven is a basin of 20 acres.

(C.)

Tabular view of the railroads mentioned in the preceding pages, where the authorities for the facts will be found.

NAMES OF RAILROAD.	Length of road.	In direction of greatest trade		Inclined planes worked by stationary power.	Cost per mile.	Cost of repairs per mile per annum.	Cost of trans-port'n per ton per mile.		Cost per mile per passenger.	Completed in the year.	REMARKS. *The roads in this table are all double tracks, made or computed.*
		Ascent.	Descent.				Act'l cost.	Cost reduced to a level.			
	Miles.	Feet.	Feet.	No.	Dlls.	Dlls.	cents.	cents.	cents.		
Baltimore and Ohio, to point of rocks. 67¼ Branch to Frederick 3¾	71	718	900	4	29,193	382	3.96	3.05	1.85	1831	Inclined planes are yet worked by horse power. Ratio of moving power, as 4 to 10.
Liverpool and Manchester, England	31	150	229	1	100,000	2,116	4.70	4.07	1.53	1830	Ratio of moving power, as 3 to 10, of the entire cost of transportation.
Baltimore and Washington	30	. . . . .	. . . . .	none.	50,000	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	Not completed, diverges from the Baltimore and Ohio, about 6 miles from Baltimore.
Columbia and Philadelphia	82	. . . . .	. . . . .	2	40,450	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	Essentially completed.
Allegany Portage	36	802	1,202	10	47,977	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	do do The elevation only embraces the inclined planes, which are together 32,840 feet in length. There are other inclinations not embraced in the planes, amounting to 1,336 feet. Total ascent and descent, 2,570 feet.
Mohawk and Hudson, exclusive of branches	16	115	334	2	38,107	. . . . .	3.50	. . . . .	1.70	1832	
Saratoga and Schenectady, computed for a double road	22	128	45	none.	17,010	. . . . .	. . . . .	. . . . .	. . . . .	1832	
Delaware and Hudson Canal Co., Carbondale	16	855	913	8	14,000	623	3.50	3.05	. . . . .	1829	Computed for a double road; (see remarks on transportation.)
Newcastle and Frenchtown	16¼	. . . . .	. . . . .	none.	30,000	. . . . .	. . . . .	. . . . .	. . . . .	1831	
Camden and Amboy from Amboy to Bordentown	33	. . . . .	. . . . .	none.	30,000	. . . . .	. . . . .	. . . . .	. . . . .	1832	
South Carolina	130	. . . . .	. . . . .	1	7,200	. . . . .	. . . . .	. . . . .	. . . . .	1833	Believed to be mostly a single track.
Excluding the Liverpool and Manchester road in the cost of construction, the average is					30,393	1,040	3.91	3.53			

Report on a Ship Canal between Hudson River and Lak Ontario. By Messrs. Jervis, Hutchinson, and Mill Engineers, March 23d, 1835.

Extracts.

The citizens of Utica presented a memorial to the Legislatur together with a report on the same from E. F. Johnson, Esq., for a steam boat canal from Utica to Oswego, to be ultimately extended to Albany. The memorial asked for a canal 8 feet deep, 58 on bottom, and 90 feet surface, with locks 130 feet long by 30 feet wide.

"In making a comparison between the cost of transportation between canals, lakes and rivers, to determine what power is the best economy, leaving out the item of toll, we have procured the following statement of charges for transportation, which are exclusive of toll on the canal.

	Mills.
For flour per ton per mile Hudson river steam tow boats, (145 miles)	8
For flour per ton per mile Erie canal, (363 miles)	8 9/10
For flour per ton per mile Erie canal, (269 miles,) to Rochester	9 2/10
For merchandise per ton per mile Hudson river, recent tariff	15 1/10
For merchandise per ton per mile Erie canal, recent tariff	21 1/2
For merchandise per ton per mile Buffalo to Detroit, 1834, (350 miles)	37 4/10
For merchandise per ton per mile Oswego to Lewiston, 1834, (146 miles)	29

"The above includes port charges. On the Erie canal the cost of animal power is 12 per cent. greater than steam power on the Hudson for flour, and 42 per cent. greater for merchandise; agricultural products, including ashes, 21 per cent. greater on the canal than on Hudson river.

"The Erie canal is small, and the traction of boats that navigate it is from 30 to 45, and most usually 40 per cent. greater than would occur on a canal of the most favorable size for the boat used. That although steamboat navigation could be effected at about one-third less than on the proposed ship canal, the agitation of water by the wheels would be too severe for the banks.

We find that even in England, where steam power is much cheaper than in this country, they adopt animal power, not only on small, but *large canals.* From the facts given, we are irresistibly led to the conclusion that the use of steam power on the proposed improvement is inexpedient, except on Oneida lake.

"That a canal boat, 104 feet long, 16 feet wide, drawing 7 feet water, would carry 200 tons, and require a lock 115 feet long by 17 feet wide; sectional area of boat below load water line 108 feet. The gross load of a schooner, with its own weight, would be 350 tons. Canal boats, constructed with reference to freight merely, will generally weigh in the ratio of their cargo as 4 to 9.

"The power required for traction will be in proportion to their transverse section, provided they hold equal similar ratios to the transverse section of the canal, or if the canal which is assumed in both cases to be equal to an unlimited expanse of water. The ratio of schooner to canal is as 1 to 3.94; the ratio of canal boat to canal as 1 to 5.48. The relative power of traction (deduced from the formula of Du Buat,) for equal sections, will be as 100 to 125. The ratios of the sections of the boat and schooner as 100 to 138; and we have, therefore, the ratio required for the boat and schooner as 100 to 167½, or the schooner will require (67 per cent.) two-third more power to tow her than for the boat. The cost of schooner 200 tons is $8,000, and the canal boat $2,800 for the same tonnage; ratio 100 to 285. In view of all the circumstances that affect the cost of transportation, we have come to the conclusion that the cost of transportation by the proposed canal, with schooners, would be 75 per cent., with canal boats constructed for this size of canal.

"The calculation for traction has been made with reference to the vessels moving at the same rate of speed, from which we conclude that the schooners would gain one day between Albany and Oswego; cost of transportation 66 cents greater per ton than by towing boats, and required double the lockage water."

REPORTS FIXING THE SIZE OF THE ENLARGEMENT OF THE ERIE CANAL.

1*st, By John B. Jervis, Jan.* 26, 1835,

Who, agreeably to the request of Wm. C. Bouck, Canal Commissioner, reported upon the comparative economy of transportation on the Erie canal, with an enlarged section. The following table, requiring much calculation, embraces the result of Mr. Jervis' report. The Erie canal is made unit:

No. Plan.	DIMENSIONS.						Area boat (ratio) to canal.	Loss by rake of bow and stern.	Burthen excl of boat (tons.)	Tractile power required.	Size of lock chamber.	Rel. cost.	
	Canal.			Boat.									
	At bottom.	At surface.	Depth.	Width.	Draught.	Length.						Navigating boat.	Transp'n (per ton.)
1	28	40	4	13¼	2¼	78	1:4.03	16	43.56	1.00	90×15	1.00	1.00
2	28	40	4	13¼	2¼	88	1:4.03	16	50.62	1.00	100×15	1.00	0.86
3	30	50	5	13¼	3	88	1:4.84	16	61.88	1.07	100×15	1.02	0.71
4	36	60	6	13¼	3⅜	93	1:5.68	16	79.11	1.18	105×15	1.19	0.65
5	42	70	7	13¼	4¼	98	1:6.83	16	98.01	1.20	110×15	1.25	0.55
6	48	80	8	14	5	103	1:7.06	17	129.89	1.53	115×16	1.51	0.50
7	36	60	6	13¼	3⅜	98	1:5.68	16	86.48	1.18	100×15	1.19	0.60
8	42	70	7	13¼	4¼	103	1:6.83	16	103.98	1.20	115×15	1.25	0.52
9	48	80	8	14¼	5	108	1:7.06	17	137.45	1.53	120×16	1.51	0.47

"When increased traction is to be provided for, the basis of calculation is taken at ⅓ the total cost of navigating the boat. On this principle, the canal should be enlarged 40 per cent. to afford the most favorable navigation for present largest size boats and load; which, reduced to the capacity of the canal for lightest traction, would be 30$\frac{90}{100}$ instead of 43$\frac{56}{100}$ as given in the table. The same principle in No. 2 will produce 35$\frac{94}{100}$ instead of 50$\frac{62}{100}$; No. 3, 49½ instead of 61$\frac{88}{100}$; No. 4, 71$\frac{2}{10}$ instead of 79$\frac{11}{100}$. The reason I did not take any case below No. 5 was, that it was the first that afforded the most economical traction; and appeared as low as, in my judgment, should be adopted. It was estimated that 1½ million dollars were paid last year for transportation. No. 5 would save one-half this."

2d, *By Holmes Hutchinson*, *Jan.* 26, 1835.

"In the improvement of the Erie canal, it will be desirable to reduce the traction of towing of boats.

"Experiments by Du Buat have shown, that the cross section of the canal ought to be 6$\frac{46}{100}$ times the cross section of the boat. and width of canal at surface 4½ times the width of the boat. The largest boats on the Erie canal are 14 feet wide and 3 feet draught. For such boats to move with the greatest advantage, the canal should be 63 feet wide, 5$\frac{11}{100}$ feet deep, and have a cross section=271$\frac{82}{100}$ sq. feet.

"For an enlarged boat 4 feet draught, and cross section equal to 56 feet, the channel should be 63 feet wide, 6$\frac{8}{10}$ feet deep, and have a cross section of 361¾ feet. The resistance in a fluid of indefinite extent being 1, would give to the present Erie canal boats of the largest class a resistance of $1\frac{59}{100}$ or 59 per cent. more than in a fluid of indefinite extent. Towing is ⅛ of the freight, or 14 cents per mile, or $8\frac{47}{100}$ cents for 100 lbs. from Albany to Buffalo.

3d, By Nathan S. Roberts, Jan. 17, 1835,

He was asked how much must the Erie canal be enlarged to reduce the expense of transportation, independent of tolls 30, 50 and 75 per cent. He replied that "the experiments of Du Buat determined that to attain this result, the cross section of the canal ought to be with moderate velocity $6\frac{46}{100}$ times the cross section of the boat, and the width of the canal at water line 4½ times the breadth of the boat." "A canal 60 feet water line, 45 feet bottom, and 5 feet depth, will very nearly give these results; thus 13½×4½=60.75 for the water line and sec. of boat 13½×3=40.5, and section of canal $60_{2}45\times5=262.5$. This calculation goes to show that the present locks of 15 feet width, are sufficient for a canal 60 feet wide." "The present canal admits boats 13½ feet wide, 3 feet draught, 80 feet long, displaces 80 tons water, weight of boat 30 to 35 tons, cargo 45 tons. Size of canal, 28 feet bottom, 40 feet surface, 4 feet depth, cross sec.=136 sq. feet. Enlarged canal to reduce cost transportation, 43¾ per cent. must be 33 feet bottom, 48 feet top, and 5 feet deep, cross-sec.=202.5; width and size of locks, 15x110 between gates, admitting a boat 102 feet long, 13½ feet wide, and 4 feet draught." The dimensions proposed by Mr. Roberts for the enlarged canal were 48 feet at surface, 30 feet at bottom and 6 feet deep, with locks 110x15, admitting boats of 100 to 120 tons burthen. The United States engineers calculated the size of a boat for 120 tons—len. on deck 100 feet, whole length 106 feet, beam 20 feet, depth of hold 7½ feet, draught 5 feet. The following statement was submitted, showing the increase of business on the Erie canal:

REMARKS.	Number of Boats arrived, and departed from Albany.	Number of Lockages, Alexander's lock.	Year.	Navigable miles.	Tolls collected on the Erie canal.
Middle section completed October, 1819	......	......	1820	94	$5,437 34
			1821	94	23,000 00
		•	1822	116	57,160 39
			1823	160	105,037 35
	8,760	6,166	1824	280	294,509 47
Canal finished Oct. 26...	13,110	10,985	1825	333	492,664 23
Uninterrupted navigation, Buffalo to Albany.....	......	15,156	1826	363	677,466 75
	......	13,004	1827	do	775,919 22
	23,662	14,579	1828	do	727,650 20
Failure in wheat crop...	21,490	12,619	1829	do	707,883 49
	23,874	14,674	1830	do	943,545 35
Rates toll 35 pr. ct. greater than 1834	26,882	16,284	1831	do	1,091,714 26
	25,826	18,601	1832	do	1,085,612 28
Rates toll reduced 20 p. ct.	31,460	20,649	1833	do	1,290,136 20
Tates toll reduced 25 per ct. on merchandise, and 10 per ct. on produce..	32,438	22,911	1834	do	1,179,744 97

4th. By Messrs. Jervis and Mills, in relation to Size of Enlarged Canal, October 23, 1835.

"That to accommodate the growing trade, without delays, and afford a cheap inter-communication, the expense will be increased less than ½ the ratio of the enlarged dimensions; we are of opinion that an 8 feet canal, by 80 wide, (except at the most expensive places, which may be 60 feet wide,) is the most suitable for the enlargement of the Erie canal."

5th. By Messrs. Roberts, Jervis, Hutchinson and Mills, on Walling and Docking the enlarged canal, Oct. 23*d*, 1835.

"Where wall is adopted, it is proposed to construct it as follows, viz.: The wall to be commenced from 2 to 3 feet below top water line, and extend to 1 foot above; the wall to have a slope from 1 to 1 to 1½ to 1, and be 15 inches thick at right angles to its face; the face of the wall, at top water line, to be in position to give the proper width of canal at this point. The slope of the wall being less than the bank, will form a berm of 2 to 3 feet broad, projecting into the canal in front of the foundation of the wall. To guard the back side of the wall against the action of waves and frost, put heavy gravel behind it."

Report on Drainage, (Chenango Canal Reservoirs,)

By John B. Jervis, 1835.

(Review of former Report while Chief Engineer on Chenango canal, December 29, 1834.)

The following useful tables, results of Mr. Jervis' examinations, are taken from this exceedingly valuable report, with his comments thereon. We believe this to be the first and only examination of this subject in this country. The facts were obtained from actual observations and measurements.

EATON BROOK VALLEY.

1835. MONTHS.	Rain gauge.	Falling water on an area of 6,800 acres.	Amount of same passing sluice from same area.	Per centage of drainage to fall.
June	6,72	165,876,480	59,407,394	0.858
July	2.74	67,634,160	27,994,240	0.414
August	2.86	70,596,240	13,547,058	0.192
September	1.34	33,076,560	9,586,513	0.290
October	3.00	74,052,000	20,694,651	0.272
November	2.20	54,304,800	23,772,620	0.438
*December	0.96	23,696,640	36,525,544	1.541
June to December inclusive	....	489,236,880	191,528,020	0.392
June to October inclusive	....	411,235,440	131,229,856	0.319

* Drained the snow of November.

MADISON BROOK VALLEY.—No. 2.

1835. MONTHS.	Rain gauge, inches.	Falling water on an area of 6,000 acres — cubic feet.	Amount of same passing sluice from same area —cubic feet.	Per centage of [illegible]
*Snow on ground which fell in November and December of 1834.	....	87,120,000	....	
January	2.17	47,262,600	23,192,079	[illegible]
February	2.50	54,450,000	35,377,594	[illegible]
†March	1.03	22,443,400	43,284,656	1.[illegible]
†April	5.00	108,900,000	80,776,974	0.[illegible]
†May	1.98	43,124,400	58,013,176	1.[illegible]
‡June	8.05	175,329,000	20,138,006	0.[illegible]
‡July	3.87	84,288,600	23,141,302	0.[illegible]
‡August	3.06	66,646,800	23,725,060	0.[illegible]
‡September	0.88	19,166,400	19,158,957	0.[illegible]
‡October	3.86	84,070,800	19,544,880	0.[illegible]
‡November	2.10	45,738,000	18,232,372	0.[illegible]
‡December	0.76	16,552,800	19,401,364	1.[illegible]
	35.26			
Jan. to Dec. inclusive, and snow	....	855,092,800	383,986,420	0.45
January to May	....	363,300,400	240,644,479	0.[illegible]
June to October, inclusive	....	429,501,600	105,708,205	0.[illegible]

* Shows the snow on the ground when gauging commenced.
† With melting snow.
‡ Drainage equalized by reservoir.

"From table No. 1 the average drainage is $\frac{2}{5}$ of the falling water, June to October included $\frac{1}{3}$, August $_{5}$, July $\frac{2}{5}$ the fall.

"From table No. 2 the average drainage for the year was the fall, January to May included $\frac{2}{3}$, June to October included the fall. The above is not only important in relation to t Chenango canal, but highly valuable to the public. The unde signed is not aware of any previous measurements having bee made in this country for determining this question."

ENLARGEMENT OF THE ERIE CANAL.

Construction Law, passed May 11th, 1835.

The Canal Commissioners were authorized, under this law, to enlarge the Erie canal, construct double locks thereon as soon as they should deem it for the public interest; the dimensions of the canals and locks to be fixed by the Canal Board. The cost of construction to be paid by the Commissioners of the Canal Fund, including completion and maintenance out of moneys which might be on hand, belonging to the Erie and Champlain.

The Commissioners divided the enlargement into four sections, assigning to each a chief engineer, as follows:

No. 1.—Albany to East end Rome summit, to John B. Jervis.

No. 2.—East end Rome summit to Jordan, to Holmes Hutchinson.
do 3.—Jordan to Rochester, to Frederick C. Mills.
do 4.—Rochester to Buffalo, to Nathan S. Roberts.

A new survey and estimate, on two plans, were directed by the Canal Commissioners, one for a canal 6 feet by 60, and the other for one 7 feet by 70; the computations to be completed by Oct. 20. The following is a summary of such estimate, on sections 1, 2, 3, and 4.

First Estimated Cost of Enlargement of the Erie Canal.

No. of Sec.	By whom made.	Dimensions of Prism.	
		60 × 6 feet.	70 × 7 feet.
1.	October 15, 1835, John B. Jervis,	$2,389,205 13	$2,864,335 96
2.	do 21, do Nathan S. Roberts,	986,530 55	1,194,804 74
3.	do 19, do Fred. C. Mills,	2,276,297 40	2,739,139 51
4.	do 20, do Holmes Hutchinson,	4,028,031 29	4,518,575 85
	Total,	$9,680,064 37	$11,316,856 06
	The above, with 10 per cent added by the Canal Commissioners,	$10,548,070 40	$12,448,541 60

(Mr. Jervis was assisted by Wm. J. McAlpine, and Mr. Mills by Henry S. Dexter.)

EXTRACTS FROM THE ENGINEERS' REPORTS ACCOMPANYING THE FOREGOING ESTIMATE.

1st. By John B. Jervis.

That the trunks of acqueducts to be made fifty feet wide, with spans between piers of eighteen feet, the locks between quoins to be 110 feet long, and 16 feet wide, placed 40 feet apart from center to center; for a 7 feet depth canal. He estimated that for favorable traction, the old canal was adapted to a boat of 31 tons burthen, a 6 feet canal to one of 71 tons, and a 7 feet canal to one of 103 tons. Water to supply canals of different dimensions.

No. 1. *Erie Canal.*—Depth 4 feet, width on bottom 28 feet, top 40 feet, slopes 1½ to 1 each side. Filtration is as the square of the depth, the areas being the same. Hence the square root of 4 is 2 for bottom; and the square root of 2 is 1.41 for slopes. Length of both slopes 14.42 feet, which is inversely as the square root of depth on bottom, to the square root of depth on slopes, to wit: 2 : 14.42 : : 1.41 : 10.16, the width of bottom, that would discharge a quantity equal to that discharged from the slopes. The whole width for comparison will be 28+10.16=38.16, say 38.

No. 2.—Depth 6 feet, width on bottom 36 feet, at top 60 feet, slopes 2 to 1 each side. $\sqrt{6}=2.45$ for bottom. $\sqrt{3}=1.73$ for slopes. Length of slopes 26.82 feet, then 2.45 : 26.82 : : 1.73 : 18.93 feet. 36+18.93=say 55 feet the width bottom.

No. 3.—Depth 7 feet, width on bottom 42 feet, at top 70 feet, slopes 2 to 1, then; $\sqrt{7}=2.64$ for bottom. $\sqrt{3\frac{1}{2}}=1.87$ for slopes. Length slopes 31.30, then 2.64 : 31.30 : : 1.87 : 22.18 ft. +42= 64 feet the width on bottom.

Comparison of No. 1 *with No.* 2.—The discharge for the same area will be $\sqrt{4} : \sqrt{6}$: : 100 : 122.50. The result for No. 1 is 38, and for No. 2,55, and as 38 : 122.5 : : 55 : 177, or No. 2 will require for leakage 77 per cent more than No. 1. (The loss on the old Erie was assumed at 100 c. feet per minute per mile.

The comparison of No. 3 with No. 1, by the same method, will require 122 per cent more than No. 1. It may safely be assumed that No. 3 will require an addition of 80 per cent over the leakage from the old canal or No. 1. The ratio of evaporation will be (less in shallow than deep water) the same as required for leakage.

Lockage water required for an 8 feet lift, assuming boats to be full loaded, will, for No. 1, be equal to 348 c. feet per min., for No. 2, 177, and for No. 3, 128 cubic feet per minute, or a 7 feet canal will require thirty-seven per cent more water than the old canal.

2d. *By N. S. Roberts.*

That the size of locks be 110 feet between quoins, and 17 feet wide (assuming the width of the canal to be 4½ that of the boat, which would be 15½ feet). Considering that the resistance to a boat passing through water is much greater in proportion to its width than depth, 6½ feet are preferable to 4½ or 5 feet draught.

Scale of Prices.

For face stone, headers, stretchers, coping, and quoins, as follows: quarrying, 16½ cubic feet, $1.50; cutting on each perch, 5½ feet at 25 cents, $1.37½; cartage, $1.43; lime and sand, 50 cents; laying into work, and attendance, $1.62½; total cost of each perch face stone laid, $6.43.

Backing as follows: quarrying, $1¼; dressing, 30 cts.; cartage, $1.43; sand and lime, 50 cents; laying, $1.62; total, $5.10. The plans of bridges similar to Mr. Hitchcock's model.

3d. Fred. C. Mills.

The plans of bridges for 70 feet canal were modifications of the lattice principle of Ithiel Town. Locks estimated as by Mr. Jervis. In relation to supply of water, he computed the drainage area of Fish creek at 340 acres, furnishing 14,300 cubic feet per minute, and estimated the cost of making it a feeder to be $34,742. Skaneateles Lake reservoir was estimated to furnish 12,100 cubic feet per minute if raised 5 feet. Gauges were made of the natural flow, "one just above the sink holes above Hiram Earll's, at 6,300 cubic feet per minute, and the other below Cole's, at 4,958 cubic feet, making a loss in two miles of 1341.67 cubic feet. Wm. Jerome stated the loss in 1832 at 50 per cent; mine are 27 per cent." He estimated that the old Erie required 13,755 cubic feet per minute, 21,644 for 6 feet canal, and 25,147 for 7 feet canal, for 85 miles.

4th. By Holmes Hutchinson.

He gave a very complete specification of the manner of constructing double enlarged locks, the basis for the specifications subsequently used in the construction. He advised the construction of the Town's lattice bridge. Upon Du Buat's formula (sec. of boat to canal as 1 : $6\frac{46}{100}$, and breadth of canal $4\frac{1}{2}$ the boat, making movement of boat as in an indefinite space of water,) he presented the following statement. Size of present canal 28 and 40 by 4; locks, 90 by 15; length of boat, 80 by 14 wide, $2\frac{3}{4}$ draught; burthen, exclusive of boat, $38\frac{85}{100}$ tons. For enlarged canal size, 42 and 70 by 7; locks, 115 by 17; length of boats, 103 feet, 16 wide, 5 feet draught, tonnage 169 tons, exclusive of boat; cost of transportation one-half the old size, or as 0.54 to 1.

ROCHESTER AQUEDUCT.

Messrs. Jervis, Roberts, and Hutchinson, submitted a report, Nov. 23d, 1835, on enlargement and rebuilding this aqueduct. They adopted the plan of using stone throughout, and fixed the width of waterway at 40 feet, and the depth at 7 feet, with slopes 2 inches to 1 foot on each side. They estimated the cost at $141,074, and for stone piers and wooden trunk at $59,148. (This work was let March 8th, 1836.)

Dimensions of Enlarged Canal Fixed.

The Canal Board, after a careful examination of the plans and estimates presented, decided on making the enlarged canal 70 feet wide at surface, and 7 feet deep; locks 110 feet between quoins, and 18 feet wide. The Board estimated that thes portions would save 50 per cent. in cost of transportation excl of tolls.

Cost of Champlain Canal, by Wm. Jerome, up to 1832, *inclu*

In answer to a Senate resolution, asking for the amount expenditures on this canal, the Canal Board replied that it difficult to obtain it, as the accounts had been kept with the E They stated, however, that in a book on construction, kept Wm. Jerome, engineer, they had found an accurate accoun all the contracts, labor, and services, from commencement of canal to the close of 1832. The total cost at that time fr Whitehall to south end Cohoes dam, including lock and dam

Troy, ($92,595.) was	$921,011
Interest on money borrowed from 1818 to 1823	92,101
Making total cost of canal	$1,013,112
Repairs, and interest on debt, in excess of tolls, 1823 to 1836	539,295
Total expenditure above receipts	$1,552,408

PROGRESS OF THE CANALS IN 1836.

Enlargement of the locks on the Cayuga and Seneca can authorized May 25th, 1836.

Construction Black River canal authorized April 19th, 183 with an appropriation of $800,000, and Porteous R. Root w appointed chief engineer in June.

Chenango canal completed October, 1836, and cost $2,271,11 (including $245,605 paid for damages and allowances on contracts This exceeds the estimated cost at contract prices in 1835 o $48,683.

First work was let on the enlargement in August, 1836, and comprised 16 set double locks, 3 to 18, inclusive, with 4½ miles canal adjoining; 1 double and 2 single locks; 1 aqueduct; 1 section at Syracuse; sections Nos. 85, 86, 19 to 25, and 10. Total estimated cost at contract prices of all work under contract in 1836 was $3,035,087.

Auction and Salt Duties.

In 1817, and until 1836, the auction and salt duties were transferred from the Common to the Canal Fund, paying $5,647,497 to the latter fund.

Improvement of Glens Falls feeder, authorized May 25th, 1836, as per report by H. Hutchinson.

Fish creek feeder was surveyed and estimate reported upon by Messrs. Jervis and Hutchinson. It was computed to furnish in the dry season 13,725 cubic feet per minute, and to cost $158,482.

Genesee Valley canal, construction authorized May 6, 1836.

Cost of completed and estimated cost of unfinished canals, as reported by the Canal Board, January 31st, 1837, in answer to an Assembly resolution.

CANAL.	Length canal.	Length feeders.	No. of locks.	Feet of lockage.	Estimated cost.	Actual cost.
Erie canal	362	8	84	689	$5,000,000 00	$7,143,789 86
Champlain canal	64		38	339½	1,000,000 00 at cont. prices.	920,517 23
G. Falls feeder	....	15				244,492 02
Dam and lock at Troy	....	3				92,595 01
Oswego canal	38	....	14	123	437,000 00	565,437 35
Cayuga and Seneca canal	21	2	11	80	153,871 88	236,804 74
Chemung canal and feeder	23	16	53	516	331,125 20	331,693 57
Crooked Lake canal	8	....	27	269	119,198 00	156,776 90
Chenango canal	97	....	116	1,021	1,960,456 28	2,270,605 22
	613	44	343	3,037½	$9,001,651 36	$11,962,711 90
UNFINISHED CANALS.						
Black River	35	11	135	1,083	$1,068,437 20	
Genesee Valley	107	15	132	1,057	2,002,285 92	
	142	26	267	2,140	$3,070,723 12	

Allowed to claimants not included in above.

To claimants for damages on the Oswego canal, up to September 30, 1836	$3,525 00
To claimants for damages on the Cayuga and Seneca canal, up to September 30, 1836	4,545 00
To claimants for damages on the Chenango canal, up to September 30, 1836	32,845 00
Total	$40,915 00
Total revenues received from canals by Commissioners of Canal Fund from 1817	$27,097,683 00
Total paid on account of canals by Commissioners of Canal Fund from 1817	23,031,329 00
Surplus	$4,066,353 00
Total receipts from tolls (included in above,) from 1817 to 1836 inclusive	$12,489,220 00

PROGRESS OF THE CANALS IN 1837.

Total cost Chenango canal, up to January 1st, 1838, includ necessary repairs, (previous to appointment of superintenden for maps, surveys, and allowances by Canal Board on contra for damages, $2,316,186.29. This includes all the feeders a reservoirs.

Black River Canal.

Estimated cost, at contract prices, by P. R. Root, Chief Enginee January 3, 1838, Rome to High Falls	$1,881,420 00
Improvement of river, High Falls to Carthage, locks and dams	98,817 00
Feeders	230,397 00
Total cost estimated at contract prices	$2,431,699 00

Number of structures on all the canals, January 1st, 1838.

640 miles canal; 394 stone locks, 72 stone aqueducts, 16 stone waste weirs, 377 stone culverts, 5 stone weigh locks, 1 241 wooden bridges, 57 repairing scows, 10 ice breakers, 7 under water excavators, 216 State buildings, 28,144 lineal feet dam 235 miles slope wall, 186 miles docking, 7 piling machines.

Work on Enlargement.

January 1st, 1838, there were 51 locks not under contract—23 between Albany and Utica, 6 between Utica and Seneca river, 12 between Seneca river and Rochester, and 5 double set combined at Lockport. The locks under contract were 25 double and 10 single, as follows: 21 double and 3 single between Albany and Schenectady, 1 double and 3 single at Little Falls, 2 double and 1 single at Syracuse, 1 single at Lyons, 2 single at Lockville, 1 double and 1 single at Macedon. Total amount of work under contract, at contract prices, Jan. 1st, 1838, $3,035,087.

Reduction and Comparison of Tolls.

The rates of tolls for 1837 were $39\frac{3}{10}$ per cent. lower than in 1832; while those of the Pennsylvania State canals and railroads for the same year were $53\frac{8}{10}$ per cent. higher than on our canals.

Total receipts of Commissioners Canal Fund from 1817 to 1837 inclusive	$28,517,782 00
Total paid by Commissioners Canal Fund from 1817 to 1837, inclusive	25,292,482 00
Surplus	$3,225,300 00

Scientific report of O. W. Childs.

On survey of overflow of lands on the Oswego canal, under act, May 12, 1837, Mr. Childs submitted an able and scientific report, January 24, 1838. He was assisted by John Lathrop, Resident Engineer. The following are extracts from the report:

DISTANCES AND ELEVATIONS TAKEN Aug. 7, 1837, OSWEGO & SENECA RIVERS.

No. of stations 3 chains apart.	PLACE.	Distance from dam at Phœnix, miles.	Elevation of low water above canal bottom, feet.	ELEVATION OF	
				Ordinary high water above canal bottom	High water, spring 1836, above canal bottom.
0	Dam at Phœnix		4.50	7.20	9.58
7	Head of Three river rapid	0.21	4.55		
19	Station No. 19	0.57	4.73		
24	Foot of Knock-em-stiff	0.72	4.79		
25	Head of do	0.75	4.81		
31	Below Enos' point	1.13	4.83		
34	Above do	1.22	4.88		
43	Head Drury bar	1.49	4.98		
60	Three river point	2.20	5.07		13.58
74	Fort Gascon rapid	2.62	5.07	11.32	13.63
83	Near Center rapid	3.09	5.54	11.39	
86	Station 86, or 258 chains from Phœnix	3.18	5.87	11.62	
90	Station 90	3.30	6.09	11.83	14.18
94	Head Gascon Rapid	3.42	6.22	12.22	14.23
100	Station 100	3.60	6.40	12.40	
115	Belgium	4.25	6.61	12.61	15.45
241	Cold Spring	9.03	6.67		
254	Mud lock	9.42	6.77	13.27	16.26
	Numbered from Mud lock.				
58	Station No. 58	11.56	6.81		
77	do No. 77	12.33	6.93		
114	do No. 114	13.64	7.04		
145	Foot of lock, Baldwinsville	14.77	7.04	13.54	17.24
157	Foot of dam, do	15.33	9.50	16.00	17.60
157	Above dam, do		16.64		

Calculations were made by Mr. Childs to determine the effect by the Phœnix dam, at low water and with flash boards on, at the head of Gascon rapids.

"Using Eytelwein's formula $a\,v+b\,v^2=RI$, (a and b constant quantities determined by experiment,) $a=0.0000242651$ and $b=0.0001114155$. These substituted for a and b and equation reduced gives $v=-0.1088941604+\sqrt{0.0118580490+8975.414285\ RI}$.

"In order to express more fully the relation between the area (w,) quantity (Q,) perimeter (x,) and fall, divided by the length (I,) a further reduction gives $0.0000242651\ Q\,w+0.0001114155\ Q^2=\frac{w^3}{x}I$.

"In the following table the velocity of river is calculated from foregoing formula, also the inclination necessary to pass the quantity of water which is actually in canal or side cut, with the surface velocity as observed.

SEPTEMBER, 1837.

No. STATION.	Calculated inclination necessary to pass the water now passing in canal.	Calculated necessary inclination in river and canal.	Actual inclination in canal.	Observed surface velocity in canal.	Mean velocity in canal.	Calculated mean velocity in river outside of canal.	Mean velocity of river and canal.	Area of canal.	Area of river.	Area canal and river.	Perimeter of canal.	Perimeter of river.	Perimeter of canal and river.	Mean radius of canal.	Mean radius of river.	Mean radius of canal and river.	Quantity per second.	
																	In canal and river compounded.	Do. calculated separate.
88...........................	.014451	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
87...........................	.023166	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
86...........................	.034056	.040	.07	3.15	2.55	1.90	2.05	2.57	8.09	1066	56.00	362	418	4.59	2.23	2.55	2,185	2,192
85...........................	.040986	.040	.09	3.44	2.81	1.95	2.00	2.57	8.23	1080	56.50	343	400	4.55	2.40	2.70	2,160	2,327
84...........................	.051480	.050	.11	3.76	3.07	2.15	2.30	2.43	7.03	946	55.00	315	365	4.42	2.23	2.60	2,175	2,257
83...........................	.065280	.062	.13	4.31	3.55	2.20	2.45	2.48	5.41	789	56.00	286	342	4.43	1.90	2.31	1,993	2,070
82...........................	.075834	.076	.15	4.55	3.77	2.30	2.65	2.62	4.69	731	59 00	278	337	4.44	1.70	2.17	1,937	2,066

"By placing flash boards on the Phœnix dam previous to commencing survey, and from observations upon the rise of water at the pegs, the results were as follows:

SENECA RIVER.

	Feet.
At the dam	0.83
At Three River point	0.59
Foot Gascon rapid	0.50
Head do	0.00

ONEIDA RIVER.

At Peter Scott's creek	0.37
At Richard's bar	0.37
¾ mile below Oak Orchard	0.29
Oak Orchard	0.10

The quantity passing Oswego river averaged 3,184 cubic feet per second, as gauged at "Knock-em-stiff."

PROGRESS OF THE CANALS IN 1838.

Enlargement of the Erie.

The total estimated cost of work under contract, at contract prices, was $10,405,913 January 1st, 1839, total paid for work completed, $11,606,093 including damages. The Commissioners of the Canal Fund were authorized by Act, April 18th, 1838, to borrow four millions.

The location for the enlargement, from Frankfort to Oriskany, was settled in 1836, and the work through Utica put under contract. The canal three miles east of Genesee St. bridge, Utica, together with the weigh lock, were put under contract September 26, 1838. 62 miles of enlargement, with all the locks and aqueducts between Albany and Utica, (not previously let,) also double lock No. 50, and one set double and single locks at Syracuse, were put under contract Nov. 17, 1838. The Jordan level, with Nine Mile Creek feeder, was put under contract October 3d, with mechanical structures. O. W. Childs was chosen to estimate upon and locate the enlargement (direct line) from Brighton to Fairport. The Commissioners decided to follow the old canal $5\frac{14}{100}$ miles longer, but saving in the estimate $965,783.

The enlargement of the Genesee river feeder was completed. The Rochester aqueduct nearly completed. Five sets of combined locks, and ½ mile canal in Rochester, and 2½ miles at Mountain Ridge, were put under contract in October.

Chemung Canal.

Fifty-two wooden locks upon the Chemung canal, built from plans by Holmes Hutchinson, all required rebuilding, so cheap and imperfect were the original plans, having been in use only six years, and costing $1,650 each.

Black River Canal.

The canal and structures, from Lansing Kill to near High Falls on the Black River canal, was let during the year. The improvement of Black River was commenced by jettees, piers, &c. The whole amount of work under contract, at contract prices, was $1,564,834.

Genesee Valley Canal.

The Genesee Valley canal, from Rochester to the Rapids, was completed during the summer, and 23 miles contracted for to Dansville. The whole amount of work under contract, at contract prices, was $4,900,122, April 6th, 1839.

Tolls.

The total amount of tolls received on all the canals, from 1820 to 1838, inclusive, $16,780,727.66.

Scientific Report of O. W. Childs, on Improvement of Oneida River, (under Act, April 18, 1838,) *Jan.* 15, 1839.

He estimated the cost of improvement for steamboat navigation at $100,049. Van R. Richmond, resident engineer, performed the field work.

Mr. Childs in obtaining the proper size of the channel at the outlet of Oneida Lake, and the velocity for easy navigation, used the following method of calculation.

The length of bar 528 feet, fall in stream $1\frac{10}{100}$, base of channel $6\frac{60}{100}$ feet below surface of lake. Velocity not observed, but calculated from Eytelwein's formula, viz.: $.0000242651v + .000111415v^2 = RI$. $v =$ mean velocity, R mean radius, or area divided by perimeter, and I the fall divided by the length. This gave a mean velocity of 2.95 feet per second, and surface velocity 3.60 feet. The quantity of water passing $= 309.54 \times 2.95 = 913.10$ c. feet per sec. The perimeter was increased $33\frac{1}{3}$ per cent for passing over rocky bottom, which made the quantity $= 990$ c. ft. per sec. To provide for contingencies, 1,000 c. feet were assumed to pass in a cut 1,188 feet long, with sides sloping 3 to 1, and a fall (after completion of the cut) of 2 inches; the width of cut at bottom being to the depth as 16 to 1. In determining the dimensions and velocity of cut, the formula of Eytelwein was used, viz.: $0.0000242651Qw+0.0001114155Q^2=\frac{w^3}{x}I$ $w=$ area, $X=$perimeter, I inclination, $W=$width at bottom, $d=$depth water in cut, $n=$ratio slope of sides to their height. Then $w=d(W+nd)$, and $X=W+2d\sqrt{1+n^2}$. As $W=16d$, and $n=3$, we have $w=19d^2$ and $x=22.324h$. Substituting these in the equation, it becomes $0.0000242651\times1000\times19d^2\times0.0001114155\text{-}\times1000^2=\frac{19^3d^6}{22.324h}\times0.0001347$. The value of d satisfying this equation is 4.947 : $W=16d=79.152$, and $w=19d^2=464.98$ and $v=\frac{Q}{w}=\frac{1000}{464.98}=2.15$ mean velocity$=2.70$ at surface, and lowering the lake 15 inches.

Champlain Canal and Glens Falls Feeder.

The widening of this feeder, as stated by the Canal Commissioners, cost $137,108.

Enlargement of the Cayuga and Seneca and Oswego Canals.

The Canal Board reported in favor of this enlargement, April 11th, 1839.

Total Payments and Receipts on each Canal, by Commissioners Canal Fund, from April 15th, 1817, to Sept. 30th, 1838.

Canals.	Total Receipts.	Total Payments.
Erie and Champlain	$31,065,057 58	$27,412,803 93
Oswego canal	1,064,720 59	1,064,720 59
Cayuga and Seneca canal	500,030 67	500,030 67
Chemung canal	569,764 26	569,764 26
Crooked Lake canal	204,462 30	204,462 30
Chenango canal	2,770,034 02	2,733,232 81
Black River canal	624,901 94	134,619 17
Genesee Valley canal	2,092,227 07	351,680 12
Totals	$38,891,198 43	$32,971,313 85

PROGRESS OF THE CANALS IN 1839.

2d, *Estimated Cost of the Enlargement of the Erie Canal, March 25, 1839. By O. W. Childs, Nathan S. Roberts, Holmes Hutchinson, Alfred Barrett, and Isaac W. Crane, Chief Engineers.*

Amount at contract and engineers' prices, $23,402,863.23, including damages and all other expenses, with 7 per cent. for engineering and superintendence. The Canal Commissio reported the same to the Legislature, in compliance with Assembly resolution.

Black River Canal.

Four public lettings were held for this canal, viz : Nov. 1, 183 May 2, 1838; September 3, 1839, and December 4, 1839. Tot expended in construction up to January 1, 1840, $761,604. Tot estimated cost at contract prices, as reported in 1838, $2,431.69

Genesee Valley Canal.

Three public lettings were held for this canal; 1st, in 183 2d, in 1838; 3d, in 1839. Total payments for construction to January 1, 1839, $1,474,273. Total estimated cost at contra prices in 1839, by Fred. C. Mills, $4,900,122, including the rese voirs, $197,099. Length main line, 107 miles; 116 lock 1,056 $\frac{83}{100}$ feet lockage.

Seneca River Towing Path.

Its construction was authorized April 18, 1838. The wor was completed Oct. 15, 1839, from Mud lock to Baldwinsvill 5⅓ miles, at a cost of $14,864.

Oneida River Improvement.

Its construction was authorized April 29, 1839; the work was put under contract, and awarded to Garrett C. Sweet, Oct. 1, 1839. The estimated cost, at contract prices, by O. W. Childs was $71,793, adding 12 per cent. for engineering and contingencies. The depth of water in all the cuts to be 4½ feet, width at outlet 80 feet, and all the others 30 to 60 feet wide, with slopes 2 and 3 to 1. The lock chambers to be 120 feet long by 30 feet wide, battered ½ inch to the foot.

Enlargement Work.

Rochester aqueduct, estimated cost, at contract prices, $422,245, and weigh lock connected, $34,683. Total amount of work done up to January, 1840, $322,751.

Lockport locks, estimated cost, at contract prices, $558,468, including short section at foot, $35,000. There were 5 pairs combined 55⅔ feet lockage. The work was put under contract October, 1838. The old locks were constructed in 1823, 1824, 1825, and cost $123,309, exclusive of excavation.

Black River Canal Extension.

Was surveyed by Ed. H Broadhead, chief engineer, under act May 3d, 1839. He transmitted his report Feb. 21st, 1840. The principal assistant engineers were John S. Stoddard, of Geneva, and Squire Whipple, of Utica. The termination was at French creek, on the St. Lawrence; and the estimated cost, with stone locks, $1,345,269.

Genesee Valley Canal.

The following scientific report of W. H. Talcott, resident engineer, is inserted in full for its useful calculations on the supply of water, embracing all the experiments and results bearing on this subject:

Report of W. H. Talcott, Resident Engineer on the Fourth Division of the Genesee Valley Canal.

I. *General Description.*

The fourth division of the Genesee Valley canal is $31\frac{86}{100}$ miles long, divided into 32 sections, numbered 76 to 107, inclusive. It commences on the Genesee river, in the town of Caneadea—continues up the valley of this river about 4 miles, then up Black creek valley to the summit swamp, thence down the valleys of Oil and Olean creeks, to the Allegany river at Olean.

The length of the summit level is $11\frac{67}{100}$ miles.

On this division there are 35 locks, (numbered 72 to 106, inclusive,) with the following lifts, to wit:

1 of 12 feet lift.
12 of 11 do
5 of 10 do
8 of 9 do
9 of 8 do

Making a total amount of 338 feet lockage. Of this amount, 26 locks, with an aggregate lift of 252 feet, are on the north side of the summit level, and 9 locks, amounting to 86 feet lift, on the south side.

The other mechanical structures, exclusive of reservoirs, are:

1 guard lock,
1 Genesee river feeder dam,
6 double track bridges,
22 single do
25 farm bridges,
1 arch culvert, 30 feet span,
4 do 20 do

2 arch culverts, 8 feet span.
2 do 6 do
9 do 4 do
17 do 3 do
15 rectangular culverts, 2½ feet span,
10 waste weirs,

2 wooden trunk aqueducts, with stone abutments a piers, one over Caneadea creek, which has 8 spaces, each 22 fe long and 10 feet high, and the other over Olean creek, near Ole with 5 spaces 30 feet long and 14½ feet high.

At Rockville, on section 82, Black creek descends rapidly for a distance of 20 chains through a defile barely wide enough for th site of the canal, bounded on either side by precipitous hills o shale and sandstone.

This difficult pass is to be overcome by constructing a sma reservoir, (by means of a dam at the head of the defile,) fro which the waters of the creek will be discharged through 4 chain of artificial channel into a ravine, leading to the valley below th defile, and the canal made to occupy the old creek channel. Th valley is also narrow and very circuitous, for a distance of 2 mile above this point, making it necessary to change the creek chann repeatedly, and in several instances to cut through projecti points of hills, composed in part of cemented clay and gravel.

A marsh, called the "summit swamp," divides the waters whic flow into the Genesee river from those which flow into th Allegany river.

The deepest cutting in this marsh is 12 feet, most of which is muck, and for about one mile will probably have to be excavate wide enough to construct gravel banks within the excavation.

In several places on the summit level, particularly on sections 95, 96, and 97, the line is located on a steep, winding side hill, as is also about one mile of the Ischua feeder.

With these exceptions the valleys are generally wide, and the line presents about the usual variety of excavation and embankment found on works of this kind.

Two reservoirs are proposed, besides the small one at Rockville, for supplying the summit level with water, to wit: one on Oil creek, half a mile from the canal, with a dam 55 feet high 600 feet long, and 285 wide on the bottom, and 1,056 feet lon and 10 feet wide on top; also a wing dam 1,300 feet long an about 20 feet high. The greatest depth of water is 45 feet.

This reservoir will cover about 490 acres, and contain 390 millions cubic feet of water.

The other reservoir is on Ischua creek, 2¾ miles from the canal, The dam is 70 feet high, 900 feet long, and 360 feet wide on the bottom, and 1,600 feet long and 10 feet wide on top. The greatest depth of water is 60 feet, and the reservoir will cover about 575 acres, and contain 588 millions cubic feet of water.

Oil creek reservoir will receive the drainage of 16,827 acres, as ascertained by survey. The drainage into Ischua creek reservoir has not yet been measured, but as near as can be computed from Burr's county maps, it will flow from 67,734 acres.

II. *Present state of the work on the Division.*

Eleven sections of canal, ta wit—numbers 76 to 86 inclusive, extending from the north end of the division to the north end of the summit level, were located previous to October 22d, 1838, and an estimate of the cost of the same prepared, which, with the incidentals, and ten per cent. for contingencies, amounted to $695,362.17.

On the 31st day of Oct., 1838, proposals were received at the letting at Mount Morris for this part of the division, at which time all the sections, 12 locks, the bridges on three sections, and the Caneadea creek aqueduct were let. The estimated cost of the work let, including incidentals, and 10 per cent. for contingencies, amounted to

gencies, amounted to	$378,896 89
The cost of the same at contract prices, including incidentals and contingencies, amounted to	383,554 56
Excess of contract over estimate prices	$4,657 67

After the letting in October, 1838, a preliminary survey was made of several lines from the north end of the summit level to Hinsdale, including the Ischua feeder. An estimate of the cost of the same, prepared therefrom, was submitted on the 10th of December following. The line called the South line was adopted, the estimate cost of which, including incidentals, and 10 per cent. for contingencies, amounted to $304,409.65.

An estimate of the cost of the canal from Hinsdale to Olean was also prepared, by Mr. H. P. Mills, in December, 1838, from preliminary surveys made in 1837, the amount of which, including incidentals, and 12 per cent. for contingencies, was $231,576.99.

These estimates, which embraced all the work on the division except the reservoirs, and the Genesee river feeder dam, are as follows:

Eleven sections north of the summit level, including mechanical structures	$695,362 17
From the north end of the summit to Hinsdale, including mechanical structures	304,409 55
From Hinsdale to Olean, including mechanical structures	231,576 99
Total	$1,231,348 81

It has been stated that eleven miles of canal were let in 1838. The remaining part of the line has been let during the present season, and proposals for the same, and for all the mechanical work on the other eleven miles, which was not let in 1838, were received at this office on the 9th day of October last. The whole amount of work offered at the letting was estimated to cost, including incidentals, and ten per cent. for contingencies, $684,146 42

The cost of the same at the prices at which it was allotted, including incidentals and contingencies, amounts to	573,017 68
Excess of estimate over prices at which the work was allotted	$111,128 74

The estimate cost of what has been taken, and for which contracts have been or will soon be executed, amounts to the sum of $531,139.26, leaving a balance not taken equal to $153,007.16.

The estimates of 1838 were made for stone locks, stone bridge abutments, and a navigable Ischua feeder, and embraced all the work on the division, except the reservoirs and the Genesee river feeder dam. Those herewith submitted are for composite locks, wood bents in lieu of stone abutments, for all except the double-track bridges, (and one farm bridge let in 1838,) and an unnavigable Ischua feeder.

By adding the Genesee River feeder dam to the estimate of last year, the two may be compared as follows:

Total amount of the estimates submitted in 1838, is	$1,231,348 81
Add Genesee River feeder dam	11,847 41
	$1,243,196 22
Total amount of the present estimate for the same, is,	1,035,358 48
Excess of the estimates of 1838 over those of 1839, is	$207,837 74

caused principally by the above mentioned change in the plan of construction.

The estimate cost of constructing the proposed reservoirs (exclusive of land and damages) is, for

Rockville reservoir	$9,409 29
Oil creek do	115,216 49
Ischua creek do	231,614 48
Total	$356,240 26

The relative value of each reservoir in feeding the canal in a year, when the fall of rain is only a minimum, may be seen by the following estimate of the amount of water which each will furnish during the time of navigation:

	Cubic feet.
Rockville reservoir	98,994,233
Oil creek do	310,881,843
Ischua creek do	1,215.666,484
Total	1,625,542,560

On the first of January, 1839, only three contracts had been commenced on the division. Now, the work is progressing on all the contracts entered into in 1838, and on 22 contracts taken in October last.

The work done on the whole division at this time, amounts to the sum of $59,318.71.

III. *Supply of Water for the Summit Level.*

In your report to the Canal Commissioners, dated Feb. 17th, 1835, the amount of water required on the summit level is stated at 3,484 cubic feet per minute, and it was then proposed to supply this amount from streams and reservoirs, as follows:

From Ischua creek, cubic feet per minute		1,122
Lime lake	do	258
Fish lake	do	311.64
Beaver and Mud lakes,	do	244.80
Black creek	do	33.56
Oil creek	do	36
Little Oil and Swamp creeks		38
Total		2,044
Deduct loss by filtration and evaporation, in conducting said waters on to summit		488
Leaving for feeding canal		1,556

In addition to the above, seven reservoirs were proposed, to wit: four natural ponds or lakes, which were to furnish for 140 days	667.7
And three artificial reservoirs, which would furnish, for the same time, the following amounts, viz:	
Ishua creek reservoir	792.3
Lower Oil creek do	284.1
Upper do do	620.2
Total	3,620.3

The minimum flow of water in all these streams was considerably less last year, than at the time you measured them in 1834, as may be seen by the following statement of gauges taken in September, 1838.

Ischua creek,	cubic feet per minute	812
Lime lake,	do	197
Fish do	do	136
Beaver and Mud lakes,	do	123
Black creek,	do	29
Oil creek,	do	81
Little Oil and Swamp creeks		0
Total in 1838, is		1,378
Total in 1834, is		2,044
Difference		666

The lakes mentioned above, are situated about 20 miles north of the canal, and discharge their waters into Cattaraugus creek. To divert these waters from their natural channel, will seriously affect the machinery erected at the outlet of the lakes, and also for a great distance down the creek. It may be well, therefore to see whether an adequate supply can be obtained, without resorting to these lakes.

In any case, nearly all the water for the summit supply must first be collected in reservoirs, and then drawn out as required for feeding the canal. The question may therefore be most properly treated, as one where the whole supply is dependent on reservoirs. It will be convenient to divide the subject into

First—THE DEMAND.

Second—THE SUPPLY.

First—The Demand.

It is obvious that the amount of water required must be sufficient:

1. *To fill the canal.*
2. *To supply the loss by evaporation and filtration from the canal.*
3. *To supply the loss by leakage and waste at the mechanical structures.*
4. *For lockage water for the trade of the canal.*
5. *To supply the loss by evaporation, filtration and otherwise, from the reservoirs.*

1. *Amount required to fill the canal.*

This will be its cubic contents, augmented by the amount of evaporation, filtration and leakage at the mechanical structures, during the time of filling. But the simple contents of the canal will be sufficient for this item, providing the filtration, leakage, &c., of canal is computed from the time the water is first let into it.

2. *Evaporation and filtration from the canal.*

The loss from these sources, (though entirely distinct, and referable to widely different causes,) is usually considered as one item. This arises partly from the fact that in most cases, particularly in this country, one bears but a small ratio to the other, and partly from the difficulty of determining the relative proportions of each, though the whole amount may easily be measured in any given case.

Direct observation alone will determine the true amount of this item, which must always depend very much upon the construction of the canal. The Chenango canal, in this State, is fed in part by means of artificial reservoirs—and more care was taken in the construction of the part thus fed, to guard against loss of water by filtration, than on any other canal in the State. If we assume that the construction of the Genesee Valley canal will be as good in this respect as the Chenango, then a very close estimate of the loss under this head may be made, by determining the amount required on the Chenango canal.

You are aware that in August last, Messrs. H. Tracy and S. Talcott were sent from this office with instructions to make whatever measurements might be necessary to determine the amount of evaporation and filtration on the Chenango canal, and the leakage at the mechanical structures; also to collect such other information relative to the supply of water on that canal as would be useful in determining the amount required on the summit level of the Genesee Valley canal.

They proceeded immediately to Binghamton, and thence along the canal to the summit level, and for the purpose of measuring the evaporation and filtration, selected, on the 31st of August, a portion of the canal, (fed from the reservoirs,) extending from the north end of the summit level to the Erie canal, a distance of 22 miles. The water for feeding it is drawn through 2 gates, each 4 feet wide, raised, one 6 and the other 5½ inches, with a head of 3½ feet above the bottom of the aperture. This gives a total discharge of 2,117 cubic feet per minute, to which should be added the leakage of the lock situated at the north end of the summit level, which was 226 feet per minute, with a head or lift of 9.4 feet.

They next passed along the line of the canal over the whole distance, (22 miles,) noting the leakage and waste at the several waste weirs and aqueducts, which was found to be in all,

Leakage, 220 cubic feet per minute,
Waste, 204 do do

and the leakage of the last, or junction lock, was 479 cubic feet per minute.

By bringing these items together, we see that the total amount of water received into the canal at foot of lock No. 76, expressed

in cubic feet, per minute, is		2,343
Leakage at waste weirs and aqueducts	220	
Waste do do	204	
Leakage at lock No. 1	479	
		903
leaving		1,440

cubic feet for the evaporation and filtration on 22 miles—equal to $65\frac{48}{100}$ cubic feet per minute per mile.

3. *Leakage at the mechanical structures.*

This includes the leakage at the locks, waste weirs and aqueducts.

1. *Locks.*—It is obvious that the locks which leak the most are those which govern this question. Also that the amount of leakage is materially affected by the lift of the lock.

The lifts of those locks which are to determine the amount of this item, on the Genesee Valley canal, are equivalent to 11 feet each.

We have already seen that lock No. 1 on the Chenango canal leaked 479 cubic feet per minute, with a lift of $5\frac{1}{2}$ feet. This amount very much exceeds the leakage of any other lock which was gauged on the canal, although the lift is the least of any. The disparity is so great as to induce the belief that the gates were not properly closed at the time of the measurement.

At lock No. 69, (where the leakage was more than at any other except No. 1,) the amount was 382 cubic feet per minute, with 8 feet lift. If we consider the leakage to be as the square root of the lift, or head, and take 382 feet for 8 feet lift, the amount for 11 feet lift will be 447 cubic feet per minute.

The locks on the Genesee Valley canal are to be composite, very similar to those on the Chenango canal, in every respect except the valve gates, of which there is to be twice as many.

A considerable amount of the leakage is at the valve gates. We are therefore of opinion that it would be unsafe to estimate this item at less than 500 cubic feet per minute, for each end of the summit level, or 1,000 for the whole.

2. *Waste weirs.*—We have already seen that this item is quite too considerable to be omitted in this inquiry.

The average at the 8 waste weirs on the Chenango canal, referred to above, is 20 cubic feet per minute, and the greatest amount at any one is 30 feet. It should be borne in mind that the structures on the Chenango canal are comparatively new. On this account they present a minimum, rather than a mean, of what may be relied upon for a series of years. The average waste over each weir was 12 cubic feet per minute. It is believed the amount of leakage may be somewhat reduced by adopting a different plan from the one used on the Chenango canal, and that 30 cubic feet per minute will provide for leakage and waste.

3. *Aqueducts.*—The greatest amount observed on the Chenango canal was 20 cubic feet per minute, for a trunk 56 feet long, equal to $\frac{35}{100}$ of a cubic foot, for each lineal foot of trunk.

As the general plan of construction is very similar in both cases, this amount may be considered sufficient for our purpose, providing the sides of the trunk are made high enough to prevent any waste over the top.

4. *Lockage water for the trade of the canal.*

This item is naturally resolved into the amount of the tra of the canal, and the number of locks full of water required f each boat.

Under the most favorable circumstances, that is to say, whe boats going in opposite directions meet at the point most favorable for passing the summit level with the least water, one lock full is required for each boat, and two locks full is the greatest amount ever required for one boat. Considering the irregularities of trade, and other things which are found in practic to affect this item unfavorably, we are of opinion that nothing less than the maximum amount can be considered a safe estimate.

It is evident that the amount of water which can be commanded in a case of this kind, should be abundant for the trade at the opening of the canal, and for any possible future increase, although it may not be necessary to provide so great an amount at first.

It is difficult to arrive at any satisfactory estimate of the future trade on the works of this kind—after all, such estimates must of necessity be in a great degree conjectural. In this case, much must depend upon whether this canal is to be connected to any useful extent with the Ohio river; without such connection, the trade can never be very extensive—but with it, the canal will become a successful competitor for a large amount of western trade, particularly that part which now goes by way of the Pennsylvania canals and railroads. Then again—in case of any interruption of the lake navigation—nearly, or quite all, which now passes through the Erie canal will be turned through this channel.

The number of lockages at the Black-Rock dam guard-lock on the Erie canal in 1836, amounted to 13,032, equal to the passage of $53\frac{41}{100}$, say 54 boats per day.

If we assume that the trade on this canal will never exceed in any one year, the amount which passed Black-Rock in 1836—then 54 boats, or 108 lockages per day will be sufficient for this item.

5. *Loss from the Reservoirs.*

It does not appear that any observations have been made in this country, by which the amount of this item can be very accurately ascertained. It may naturally be subdivided into the amount due,

1. *To evaporation.*
2. *To filtration and absorption.*
3. *To leakage at the fixtures for drawing water.*

But we have not sufficient data to analyze this question satisfactorily. The observations on this subject seem to have been made with reference only to the entire loss,—and it has been usual to refer the measure of that loss, to the surface of the reservoir.

Mr. J. J. Abert, in "a report to T. W. Veazey, Governor of the State of Maryland, in reference to a canal to connect the Chesapeake and Ohio canal with the city of Baltimore," dated December 10th, 1838, quotes from Sutcliff as follows: "In the summer months, they (meaning the reservoirs of the Rochdale canal) sink one inch per day, when the cocks are shut close, and yet I think no reservoirs are more water-tight than they. But I will only estimate upon the reservoirs wasting half an inch per day, and confine it to those on Blackstonedge, as that at Hollingswork gives a certain quantity of water constantly to the mill owners, which makes it difficult to ascertain how much it wastes."

Mr. Abert also states, that "for the same object Andreossie applies to the reservoirs of the Languedoc canal 12 millemetres per day, equivalent to 0.472 of an inch. These rates, says he, "are given by both authors, as actual states of loss from exposed surfaces, under the effect of rain upon them." He also adopts in his report half an inch per day, during the whole year for this item—nevertheless, this rule cannot be of universal application; for the evaporation only is uniform over the whole water surface, while the character of the soil and the depth of water in the reservoir, must necessarily affect the amount of filtration and lockage—and besides, the loss from evaporation is much greater in summer than in winter.

Although we have not the requisite data for analyzing the *whole* subject, we still think that a separation into, *loss by evapo-*

ration, and *loss from all other sources*, will facilitate this inquiry, particularly in its application to parts of the year.

1. *Loss from Reservoirs by evaporation.*

Various experiments have been made on the evaporation of water from small exposed surfaces—and much ingenuity displayed in the construction of hygrometrical instruments, and in other efforts to determine the absolute quantity of moisture in the atmosphere, and its capacity to drink up water at different temperatures, and in different states of weather; but we have sought in vain for something directly applicable to this subject.

Mr. Abert has collected many interesting facts on the evaporation of water, from experiments made in England and France, from which he has deduced a ratio between the evaporation of the laboratory, and that which exists on a canal; which ratio, he says, "will be found to be as 1 to 1.44." However this may be, in regard to canals, we think it cannot apply to large water surfaces, where the depth is considerable, as in the case of a reservoir. It certainly cannot be applicable to the whole water surface on the globe; for this would make the amount of evaporation very much greater than the falling water.

Mr. Abert states, that "Mr. Sullivan, in his report upon the Chesapeake and Ohio canal, gives the annual evaporation at Salem (Mass.) at 56 inches; and the Board of Engineers, in their report upon the Morris canal, in 1823, state that Mr. S. Williams had ascertained the evaporation at Cambridge (Mass.) to amount annually to 56 inches.

We shall introduce here a table of observations on the evaporation of water, by Hoyle and Dalton of England; also another by James Coffin, Esq., of Ogdensburgh, N. Y.

I.—TABLE

Of the mean monthly evaporation from water surface, and from the surface of the ground, during the years 1796, 1797 *and* 1798. *By Hoyle & Dalton. To which is affixed the average daily evaporation deduced from the monthly.*

[*From the Edinburgh Encyclopedia.*]

MONTHS.	EVAPORATION FROM THE SURFACE OF			
	WATER.		GROUND.	
	Monthly inches.	Daily inches.	Monthly inches.	Daily inches.
January	1.50	0.0484	1.01	0.0326
February	2.00	0.0714	53	0.0189
March	3.50	0.1129	62	0.0200
April	4.50	0.1500	1.49	0.0496
May	4.96	0.1600	2.69	0.0868
June	6.49	0.2163	2.18	0.0726
July	5.63	0.1816	4.09	0.1319
August	6.06	0.1955	3.38	0.1090
September	3.90	0.1300	2.95	0.0983
October	2.35	0.0758	2.67	0.0861
November	2.04	0.0680	2.05	0.0683
December	1.50	0.0484	1.48	0.0477
Amount	44.43		25.14	

II.—TABLE

Of the monthly evaporation from the surface of water at Ogdensburgh, N. Y., in 1838, *by James Coffin, Esq., Principal of the Ogdensburgh Academy. To which is affixed the average daily evaporation for each month, deduced from the monthly. Also the monthly temperature and rain.*

[*From the Report of the Regents of the University of N. Y. for* 1838.]

MONTHS.	EVAPORATION.		Inches of rain and snow.	Degrees of temperature.
	Monthly inches.	Daily inches.		
January	1.625	0.0533	2.36	24.75
February	817	0.0292	97	12.33
March	2.067	0.0667	1.18	32.94
April	1.625	0.0542	40	39.81
May	7.100	0.2290	4.81	52.54
June	6.745	0.2248	3.57	66.53
July	7.788	0.2512	1.88	71.66
August	5.415	0.1745	2.55	68.31
September	7.400	0.2466	1.01	59.22
October	3.948	0.1273	2.73	44.58
November	3.659	0.1220	2.07	29.74
December	1.146	0.0370	1.08	19.43
Amount	49.362		24.61	

If these rates of evaporation can be safely applied to a reservoir, (and the danger, if any, is that they are too high,) th the locality of Ogdensburgh entitles the experiments of M Coffin to the preference in their application to this examinatio

2. *Loss from reservoirs by filtration, absorption and leakage.*

We have stated above the observations of Sutcliff and Andreossie, which fix the total loss, from all sources, at about half a inch per day, from the surface of the water in the reservoir. This is certainly, at best, but a very indefinite term; and yet, for want of something more definite, we are compelled to adopt it in preference to relying on mere conjecture.

By this rule the total loss will be $182\frac{50}{100}$ inches per annum, from which deduct the loss by evaporation, (49.36 inches,) and there remains for this item $133\frac{14}{100}$ inches, which is equal to 0.3647 of an inch per day.

SECOND—THE SUPPLY.

The questions to be considered under this head, are:

1. *What is the annual fall of rain?*
2. *How much of the falling water can be collected in a reservoir!*

1. *How much water falls in a year?*

The annual reports of the Regents of the University of this State contain rain tables, kept in obedience to their instructions, at sundry academies in more than 40 different localities in this State. These tables, which give the monthly fall during each year, afford data for solving this question.

The general average fall, for 13 years, to wit: from 1826 to 1838, inclusive, as far as reported, amounts to $36\frac{24}{100}$ inches.

If all the reservoirs could be made of such capacity as would secure the entire drainage of each valley during a year of greatest fall, we might, with considerable propriety, adopt the average fall of the whole State. This, however, can be done in only one of the three valleys, from which the supply for the summit is to be obtained; and even in this one case, provision for a year in which the fall equals this general average, is as great as will combine economy and utility in the construction of the reservoirs.

It will, therefore, in almost every instance, be necessary to obtain a year's supply from what falls, from the close of navigation in one year to the close of navigation in the next year. This being the case, it will readily be perceived that the least annual fall of rain is that upon which our calculations for a supply ought to be based.

The only difficulty lies in deciding upon a locality the most applicable to the place under consideration. An attentive examination of the Regents' reports shows that, exclusive of Long Island, the fall is greatest in the most elevated parts of the State. The valleys from which drainage, in this case, is to be obtained, are from 1,600 to 2,000 feet above tide water.

Hartwick, in Otsego county, is 1,100 feet above tide water, and in many respects appears to be as applicable as any selection that can be made. At this place the average fall for 10 years is 38.44 inches, but in 1837 the amount was only 28.25 inches.

It is well known that a large amount of the annual rain in this country falls in showers, whose track is frequently narrow; thus causing a considerable range in the annual amount of falling water, even in contiguous districts. This renders it impossible to determine the amount of fall upon any considerable territory, by observations confined to one place.

In adopting a rate of rain equal to the fall at Hartwick in 1837, we would remark, that it is less than the fall at other contiguous places during the same year. The monthly fall is as follows:

January	1837	20	inches.
February,	"	1.62	"
March,	"	1.85	"
April,	"	2.36	"
May,	"	4.33	"
June,	"	3.51	"
July,	"	2.80	"
August,	"	2.94	"
September,	"	88	"
October,	"	3.68	"
November,	"	1.84	"
December,	"	2.35	"
Total		28.36	inches.

2. *How much of the falling water can be collected in a reservoir?*

We commence this inquiry by quoting from a report, "on the ratio between drainage and the fall of rain and snow, in the district supplying the Chenango canal, by John B. Jervis, Esq., civil engineer, dated January 14th, 1836," as follows:

"On Madison brook and on Eaton brook, gauge sluices h been put in, and the water gauged daily at each, during the wh time, exhibited in the following tables."

"A rain gauge was established at Eaton brook, and the qua tity of falling water carefully recorded; at Madison brook th rain gauge kept at the Hamilton academy has been furnished f this purpose."

"The country descending to the sluice, in each case, has bee measured, and the results from the tables afford correct data t determine the question of drainage."

TABLE No. 1.—EATON BROOK VALLEY.

1835. MONTHS.	Rain gauge. Inches.	Falling water on an area of 6,800 acres. Cubic feet.	Amount of same passing sluice from same area. Cubic feet.	Perc'tag of drain-age to fa
June	6.72	165,876,480	59,407,394	0.3
July	2.74	67,634,160	27,994,240	0.4
August	2.86	70,596,240	13,547,058	0.1
September	1.34	33,076,560	9,586,513	0.2
October	3.00	74,052,000	20,694,651	0.2
November	2.20	54,304,800	23,772,620	0.4
December*	0.96	23,696,640	36,525,544	1.5
June to December inclusive	....	489,236,880	191,528,020	0.3
June to October inclusive	....	411,235,440	131,229,856	0.3

* Drained the snow of November.

TABLE No. 2.—MADISON BROOK VALLEY.

1835. MONTHS.	Rain gauge. Inches.	Falling water on an area of 6,000 acres. Cubic feet.	Amount of same passing sluice from same area. Cubic feet.	Perc'tage of drain-age to fall
*Snow on ground which fell in November and December of 1834	....	87,120,000	....	....
January	2.17	47,262,600	23,192,079	0.491
February	2.50	54,450,000	35,377,594	0.649
†March	1.03	22,443,400	43,284,656	1.928
†April	5.00	108,900,000	80,776,974	0.741
†May	1.98	43,124,400	58,013,176	1.345
‡June	8.05	175,329,000	20,138,006	0.115
‡July	3.87	84,288,600	23,141,302	0.274
‡August	3.06	66,646,800	23,725,060	0.356
‡September	0.88	19,166,400	19,158,957	0.999
‡October	3.86	84,070,800	19,544,880	0.232
‡November	2.10	45,738,000	18.232,372	0.399
‡December	0.76	16,552,800	19,401,364	1.172
Jan. to Dec. inclusive and snow	35.26	855,092,800	383,986,420	0.449
January to May inclusive	....	363,300,400	240,644.479	0.662
June to October inclusive	....	429,501,600	105,708,205	0.245

* Shows the quantity of water furnished by the snow on the ground when the gauging commenced. † With melting snow. ‡ Drainage equalized by reservoirs.

"From table No. 1, it appears the average drainage from June to December inclusive, (7 months,) was 0.392 of the falling water, or nearly $\frac{2}{5}$, and the average from June to October inclusive, (5 months,) was 0.319, or nearly $\frac{1}{3}$ of the fall. August is the minimum month, and shows a drainage of 0.192, or nearly $\frac{1}{5}$ of the fall. July is the maximum month, (except December, which drained the snow of November,) and a drainage of 0.414, or over $\frac{2}{5}$ of the falling water."

"From table No. 2, it appears the average drainage for the year 1835, including the snow on the ground the 1st of January, was 0.449, or nearly half of the falling water. January to May, inclusive, (5 months,) 0.662, or say $\frac{2}{3}$ of the fall. June to October inclusive, (5 months,) 0.246, or say $\frac{1}{4}$ of the fall. It will be observed the quantity drained from June to October inclusive, was very uniform, although the falling water is very different, which causes a great range in the ratios for the several months. This was produced by the reservoir on Madison brook, which retained the flood waters, and discharged them nearly uniform through the reservoir pipes, causing the highest ratio to appear in the month of the least fall, and the smallest ratio in the month of the greatest fall of water. It is therefore obvious that an average of June to October, (5 months,) will be required, to give a proper view of the drainage during the season of the greatest evaporation,"

"From June to October, the Eaton brook valley gave a drainage of 0.319, and Madison brook valley 0.246 of the falling water. This result, it is believed, has been produced by the different characters of the two districts drained. The Eaton brook valley is, in itself, very narrow, and the grounds that drain into it are generally quite steep, and the soil is mostly of a very close texture. The Madison brook valley is much wider, the slopes of the adjoining lands that drain into it are more easy, and the soil in some parts is more porous than that on Eaton brook."

"The Eaton brook valley, I should think, would afford more than an average drainage over a large district of country, including the usual varieties of soil; and the Madison brook would probably not differ materially from the general average."

The tables show the fall and drainage which occur in each month. But these divisions, applied to the fall and drainage of water, do not appear natural, inasmuch as they do not give a correct ratio for parts of the year, because there may be a great fall in the last days of one month, the drainage of which will be mostly in the succeeding month, thus giving too great a ratio of drainage to one month, and too small to the other, which would not be the case if the divisions had reference to the falling water instead of the months.

The ratio of drainage from June to October inclusive, appears to be,

On Eaton brook valley 0.319 of the fall.
On Madison " 0.246 "

Difference...... 0.073, which is equal to about 30 per cent of the latter, and this too against the greatest fall, for the fall on Madison brook was 19.72 inches, and only 15.66 inches on Eaton brook.

This extraordinary difference is attributed to the "different character of the two districts drained." If such is the case, it is manifestly unsafe to apply either of these results to any other valley, unless it can be shown that there is an exact similarity between the two.

There are, however, some things tending to diminish this difference, which do not appear to have been considered in Mr. Jervis' report.

It is there stated, that Madison brook reservoir "retained the flood waters, and discharged them nearly uniform through the reservoir pipes." The gauge sluice was below the reservoir dam, so that the gauging indicated only what was discharged through the pipes each day, instead of what drained off from the valley.

From the table, it appears that the discharge from June to October inclusive, was nearly uniform, and amounted to about 20 millions cubic feet each month. To discharge this amount through the pipes of Madison brook reservoir, requires a head of about 30 feet, as ascertained by trial during the past season. With 45 feet depth of water, the surface area amounts to 235 acres. It may, then, reasonably be supposed, that 30 feet deep will cover at least 100 acres, and that therefore the drainage of this valley must have been exposed, during the whole time, to the waste of a reservoir of these dimensions.

The Canal Commissioners, in their report of 1835, say, in relation to waste from reservoirs, that "a particular examination of the banks of reservoirs No. 1 and 2, on Madison brook, has shown that the soil is much more porous than was anticipated, and more particularly No. 1." This indicates that the waste from filtration may have been very considerable, in addition to the evaporation. If the waste on this account was equal to the rates we have adopted in this inquiry, the amount would be 30,666,240 cubic feet.

A considerable amount must also have been left in the reservoir, on the last day of October, for the discharge in November amounted to over 18 millions cubic feet, which would require a constant head of nearly 25 feet. If the water was even 20 feet deep at the end of October, the amount thus retained was probably 20 millions cubic feet. By adding these sums to the amount gauged, the ratio of drainage is swelled to 0.364 of the fall, which exceeds the ratio of Eaton brook valley; but the fall was greatest on Madison brook valley; hence a greater ratio of drainage might be expected.

If these corrections are applied to the drainage of Madison brook valley, during the whole year, the ratio will be 0.518 of the fall. It does not follow, however, because the ratio of drainage is 0.518 of the fall, where the fall equals 39.26 inches per annum, that it will be the same with any other rate of fall. Nor does it follow, either from the experiments quoted above, or from any we have ever seen, that there exists any constant ratio between the fall and drainage.

If we should inquire why the drainage does not equal the fall, the universal answer would be, that certain natural consumers of rain, such as evaporation, vegetable and animal life, filtration for the supply of the lower levels, &c., must first be supplied from the fall; and that therefore the drainage can only amount to what is left after these demands are supplied.

These demands are much more uniform than the falling water, and since they must be supplied first, it is evident that the drainage will depend altogether upon the excess of fall over what is required for their supply. The amount thus consumed, in this climate, is much greater in summer than in winter, the natural result of which is, a greater ratio of drainage from winter than from summer fall—an inference clearly sustained by Mr. Jervis' observations.

From observations taken during September, October, and November of the present year, it is ascertained that on Oil creek valley the amount of fall was 5.54 inches, and the
drainage, 1.17 "
leaving 4.37 " for the consumption
from the valley.

Table No. 1 shows, that during the same months in 1835 the fall on Eaton brook valley amounted to 6.54 inches, and the
drainage to .... 2.19 "

leaving.............................. 4.35 " for a consumption from the valley.

A comparison of Eaton and Madison brook valleys, by the tables, shows that the consumption from June to December inclusive, was

On Madison............................ 15.99 inches.
On Eaton................................ 12.05 "

If, however, the corrections, as stated above, on account of waste from the reservoir, are applied to Madison brook reservoir, the result is,

On Madison............................ 13.30 inches.
On Eaton................................ 12.05 "

We do not claim that these facts are sufficient to establish any general rule, although they seem to confirm the views herein taken of this question.

If the above reasoning is correct, it becomes necessary to determine the amount required for natural consumption, in order to know how much will drain off.

Hoyle and Dalton found the evaporation from the surface of the ground in England equal to 25.14 inches per annum. By table No. 2, it appears that the whole consumption on Madison brook valley was 21.63 inches; but allowing for waste from the reservoir, the amount is only 18.93 inches.

Mr. Jervis' observations show the entire consumption of the valley. For this reason, as well as on account of their contiguous locality, they are the most applicable to this inquiry.

There are objections to using the results obtained on Madison brook valley, from June to December. Nevertheless, if we adopt a rate of consumption equal to that deduced from the table, the error, (if any,) tends to exhibit the drainage below the amount which will be realized in practice.

In applying the foregoing results to the summit level of the Genesee Valley canal, we propose to assume a canal navigation from the 1st April to the 1st of December, equal to 244 days.

From the above reasoning we conclude that,

1st. The evaporation and filtration will amount to 66 cubic feet per minute per mile.

2d. The leakage at the mechanical structures will be, per minute, for the locks, 500 cubic feet at each end of the summit level; for leakage and waste at each waste weir, 30 cubic feet, or 210 feet for the whole, and 53 cubic feet for Olean creek aqueduct, making a total leakage and waste at the mechanical structures of 1,263 cubic feet per minute.

3d. We are to allow 2 locks full of water per boat for passing the summit, and 27 boats each way per day, equal to 1,194 cubic feet per minute.

4th. The loss from the reservoirs will be, by filtration, absorption and leakage, 0.3647 of an inch per day from the surface, and by evaporation, the same rate as that observed by James Coffin, Esq., of Ogdensburgh, in 1838.

5th. To adopt for the falling water the same per month as the fall at Hartwick, in 1837; to wit, 28.36 inches, and

6th. To allow 21.63 inches for the natural consumption of rain in the valley, which leaves 6.73 inches for the drainage.

Having settled the preliminary questions relating to the amount of water required for the canal, the fall of rain and of drainage, we are now prepared to apply these results to the case under consideration.

In the arrangement of reservoirs, three are proposed, as follows:

1st. *Rockville reservoir*, on Black creek, with a dam 20 feet high, a water surface of 72 acres, and containing 18,223,000 cubic feet of water. It will receive a drainage from 15,563 acres.

2d. *Ischua creek reservoir*, on Ischua creek. This location will admit of a dam 70 feet high, a water surface of 575 acres, and the reservoir will contain 588 millions cubic feet of water, and receive the drainage from 67,734 acres.

3d. Oil creek reservoir, on Oil creek, the dam to be 55 feet high, and the water surface 490 acres. It will contain 390 millions cubic feet of water, and receive the drainage from 16,827 acres.

The location of Rockville reservoir is such that, in any case it can only supply 4½ miles, including one waste-weir.

As the drainage into this reservoir, during either of the three first months of navigation, very much exceeds the amount required for the 4½ miles of canal, it may be assumed that on the first day of July it will be full, having supplied this part of the canal up to that time. The fall in July is 2.80 inches, which is probably about the amount required for the natural consumption. There will, however, be considerable drainage during this month, for, in time of severe drought in September, 1838, this stream at its lowest stage, afforded 29 cubic feet per minute.

As there has been no drought up to the 1st of July, it may reasonably be supposed that the drainage during this month will be at least one hundred cubic feet per minute, which will

amount to	4,464,000	cubic ft.
In reservoir on 1st July	18,223,000	do
	22,687,000	do
Loss from the reservoir will be	2,770,416	do
Total amount available in July	19,916,584	do
Required to feed canal	14,597,280	do
In reservoir 1st August	5,319,304	do

The fall in August exceeds the consumption, but in September the consumption is more than the fall, and then again in October the fall is the greatest. In order to arrive at correct results of drainage for these months, it is necessary to embrace them all in one statement, because the consumption, in time of severe drought, is not supplied entirely from what is yet retained of the previous fall. It also reaches forward to the succeeding rain, by drawing out from the soil, and the surface of the ground, moisture which must be supplied again by absorption from the next fall of rain.

The fall in these three months is	7.50 inches.
And the consumption as we have apportioned it	7.10
Leaving	0.40 of an inch

to drain into the reservoir during these three months.

The amount will be	22,597,476	cubic ft.
On the 1st of August there was in the reservoir	5,319,304	do
	27,916,780	
Loss from reservoir amounts to	3,099,200	do
Total amount available in August, September and October	24,817,580	do
Required to feed canal	43,329,960	do
Showing a deficiency of	18,503,380	do

which must be supplied from the other reservoirs.

The amount which will enter the reservoir in November, is	13,558,485	cubic ft
Loss from reservoir	531,432	do
Total amount available in November	13,027,053	do
Required to feed canal	14,126,400	do
Showing a deficiency for this month of	1,099,347	do
Bring down deficiency at end of October	18,503,380	do
If this statement is correct, then	19,602,727	do

of water must be drawn from the other reservoirs during the season of navigation to feed this portion of the canal. It might be shown that the difference in the leakage of the locks, above and below where the water from this reservoir is received into the canal, (on account of their different lifts,) would reduce this deficiency, and also that the drainings into the reservoir will be increased by the filtration of the canal. There are, however, so many contingencies connected with the whole subject, that it is thought best not to bring these amounts into the calculation.

The location and dimensions of the other reservoirs will admit of making one general statement for the whole year.

		Cubic feet.
The drainage from the two valleys amounts to		2,065,816,773
Loss from reservoirs		282,760,018
Total amount available for feeding canal		1,783,056,755
The amount required for the canal is:		
For filling canal	19,388,160	
Evaporation and filtration	631,255,680	
Leakage at mechanical structures	436,777,920	
Lockage water	419,523,840	
Deficiency at Rockville reservoir	19,602,727	
		1,526,548,327
Surplus		256,508,428

which is about 15 per cent. of the total amount required for feeding the canal.

Respectfully your obedient servant,
WM. H. TALCOTT.

Cuba, Allegany Co., Dec. 31, 1839.
FREDERICK C. MILLS, Esq.,
Chief Engineer G. V. canal.

Value of real and personal property of this State, as reported by the Canal Committee, March 28th, 1840, was as follows: for the year 1815, $231,000,000; 1825, 263,000,000; 1835, $530,000,000; 1838, $627,000,000; 1839, $654,000,000; the increase being equal to 55 times the original cost of the Erie canal 14 years after its completion.

Total Expenditures for Repairs by Superintendents, from 1826 *to September* 30*th*, 1839.

Erie and Champlain canals	$4,071,116	24
Oswego canal	278,837	12
Cayuga and Seneca	150,201	59
Chemung canal	111,032	37
Crooked Lake canal	25,184	76
Chenango canal	57,566	11
Total	$4,693,938	19

Champlain canal and Glens Falls feeder: the work constructed under the law of 1836 was 12 stone locks, and enlargement of the feeder. The amount estimated to complete these improvements was $247,706.

Oswego canal, in 1840, contained 18 locks, 6 guard locks, stone, 8 dams, 32 bridges, 8 culverts, and 1 aqueduct.

Cayuga and Seneca canal: 12 locks, 4 waste weirs, 58 bridges, and 6 dams.

Chemung canal: Joseph D. Allen, chief engineer, submitted a report of the cost of enlarging, to the size of the Erie, the Chemung canal, from Havana to the lake, at $104,902, March 17th, 1841.

PROGRESS OF THE CANALS IN 1840.

Enlargement of the Erie Canal.

The work under contract between Albany and Little Falls, including structures at contract prices, $6,730,825. The number of enlarged locks, 39, and on the old canal, 46, between these points. Estimated cost of work to be put under contract on this portion, $2,075,822. Sections 123 and 124 under construction. Lock No. 47 completed in May, and No. 48 in November, 1840. It was found that the old canal from Lockport to Brockport had a declivity of half an inch per mile, and from thence was level to Rochester. Total amount of work under contract, including all damages, engineering, &c., $12,817,429; total amount paid on same Jan. 1st, 1841, $8,247,295.

Champlain Canal.

2 stone locks, 2 aqueducts, and slope wall on 5 miles, were built during the year. 2 stone locks were let Oct. 6. Of the 24 locks on this canal, 2 were rebuilt of stone in 1834-35-40, and 2 completed in 1842. 2 were rebuilt previous to 1832.

PROGRESS OF THE CANALS IN 1841.

Enlargement of the Erie Canal.

Total amount of work under contract, January 1st, 1842, $13,769,550, in detail as follows: 111 miles on the Eastern, 94 miles on the Middle, and 159 on the Western Division.

The number of locks on the old Erie canal was 83. Number located for the enlarged canal, 74, of which there were under contract:

36 double and	9 single, equal to	40½ double, on the	Eastern division.
1 do	4 do	3 do	Middle do
1 do	10 do	6 do	Western do

The lower Mohawk aqueduct cost $315,071.

Supply of Water.

During the dry season, observations were made by O. W. Childs, of the supply and deficiency of water between Lodi and Little Falls, 82½ miles. Total supply from present feeders, 9,254 cubic feet per minute. The amount consumed at the extremities for lockage and leakage of locks, 2,440 cubic feet; for Oneida Lake canal and Utica weigh lock, 1,248 per minute; for filtration, the evaporation and loss at structures of 5,566 cubic feet, equal to 67½ cubic feet per minute per mile; 20¾ miles were enlarged, and 64¼ old canal.

Utica weigh lock completed and brought into use.

Oneida Lake Canal,

In pursuance of act May 11, 1840, chap. 258, was purchased by the Canal Commissioners, for $50,000, including feeder.

Enlargement across Cayuga Marshes.

The present location and plan (1862) of crossing the Cayuga marshes were determined upon by the Canal Commissioners and chief engineer in charge in 1840 and 1841. O. W. Childs was the chief, and Van R. Richmond resident engineer, whose plans and recommendations for the higher level, were adopted by the Canal Commissioners.

Rooms in the new State Hall were assigned to the Canal Department by act May 25th, 1841.

Champlain Canal and Glens Falls Feeder.

An act to improve the same, and appropriating $75,000, passed April 19th, 1841.

Seneca River.

The act to reduce Onondaga lake to the level of Seneca river passed May 10th, 1841.

Cost of Enlargement Work in 1841, *at Contract Prices.*

1 mile enlarged canal,	(average of	57	contracts)	$37,550
1 set double locks,	do	27	do	76,273
1 aqueduct, small class,	do	6	do	32,530
1 do large do	do	3	do	234,376

Proposition by a Company to complete the Canals.

A petition, signed by Horace Birdsall, J. L. Curtin, George Mann, and T. Roberts, asked the Legislature to incorporate a company called "the Erie Canal enlargement and the Black river and Genesee Valley canal completion company," with a capital of $25,000,000, divided into shares of $100 each, for the purpose of raising funds, in addition to the canal tolls, for the completion of these canals within three years from January 1st, 1842. As stated by the petitioners, their proposition was to avoid the arresting of the prosecution of the aforesaid canals by the State, then indicated by the Legislature. The company, after the completion of said canals, was to provide for all deficiencies after the application of the tolls, to meet State stock created for that purpose, and pay the same up to the year 1860. The company to receive the tolls for five years thereafter, after all deductions of expense of collection.

Financial Condition of the Canals.

The gross amount of all the tolls received from all the canals up to Sept. 30, 1841		$21,130,529 00
Deducting expense of operating same, viz:		
Payments to superintendents for repairs	$5,435,882 00	
Payments to collectors and inspectors	484,881 00	

Payments to weigh masters	$67,656 00	
Payments miscellaneous expenses	700,191 00	
		$6,688,612 00
Net proceeds of tolls from 1820 to 1841, inclusive		$14,441,917 00

Canal Debt.

The debts contracted for the construction of the following canals, Sept. 30, 1841, were for:

		Loans.	Annual interest.
Enlargement of the Erie canal		$6,941,119 00	$354,211 96
Oswego canal	at 5 pr. ct.	421,304 00	21,065 20
Cayuga and Seneca	do	237,000 00	11,850 00
Chemung canal	do	430,292 00	21,514 61
Crooked Lake canal	do	120,000 00	6,000 00
Chenango canal	do	2,402,535 00	120,326 78
Black River canal	do	1,076,706 00	53,835 31
Genesee Valley canal	do	2,556,379 00	127,818 99
Oneida Lake canal	do	50,000 00	2,500 00
Improvem't Oneida river	do	50,000 00	2,500 00
Original Erie and Champlain debt		2,021,037 00	211,300 00
Actual canal debt and interest		$16,306,374 00	$832,922 85

Of all the moneys received and paid, on account of all the canals, by the Commissioners of the Canal Fund, from 1817 to Sept. 30, 1841.

Total receipts from all sources	$55,565,506 00
Total payments	52,408,242 00
Surplus	$3,157,264 00
With a canal debt of	$16,306,374 00
And enlargement work under contract	13,769,550 00

Reduction of Rates Toll since 1825.

Comptroller Flagg, in his report of 1839, stated that the rate of toll on merchandise had been reduced since 1825 from 30 mills to 9 mills, and on agricultural products from 15 to 4½ mills.

Commissioners Canal Fund stated in report, 1837, that the reductions in the rates of toll were equal to an average of 36 per cent. upon all products transported. Mr. Paige, from Committee of Finance, 1839, stated that a general reduction in the rates of toll was made in 1833, and in that and the next yea reduction was made equal to about 36 per cent., as compa with former rates.

Anticipated Tolls on the Erie from 1826 *to* 1836, *by Canal Co missioners Van Rensselaer, Young, Seymour and Bou in* 1825.

(In making this comparison, the Commissioners of the Ca Fund state in the report for 1842, that the accounts of the Er and Champlain had never been kept separate until the fisc year of 1841, and, in order to separate them, they used the rela tive per centage, as stated in the report of the Commissioners o the Canal Fund in 1840, viz: That the Erie canal contributed 84 per cent., and the Champlain canal 16 per cent. In 1841 i was 17 per cent.)

YEAR.	Inhabitants, estimated.	Tolls, estimated.	Actual receipts, after deducti expense of collection.	
			Erie canal, after deducting 16 per cent. for Champlain.	Champlain canal.
1826	1,000,000	$500,000 00	$707,017 35	$134,669 [illegible]
1827	1,100,000	550,000 00	739,451 22	140,847 [illegible]
1828	1,200,000	600,000 00	695,080 96	132,396 [illegible]
1829	1,300,000	650,000 00	670,149 89	127,647 [illegible]
1830	1,400,000	700,000 00	854,432 76	162,748 [illegible]
1831	1,500,000	750,000 00	997,196 76	189,942 [illegible]
1832	1,600,000	800,000 00	909,895 04	173,313 [illegible]
1833	1,700,000	850,000 00	1,133,579 09	215,919 [illegible]
1834	1,800,000	900,000 00	1,124,187 38	214,130 [illegible]
1835	1,900,000	950,000 00	1,201,659 22	228,887 [illegible]
1836	2,000,000	1,000,000 00	1,293,022 83	246,289 [illegible]

It will be seen, by the above table, that Col. Young and his associate Commissioners, had the gratification of seeing their prophetic estimates of 1825, more than realized, notwithstanding the great reduction in the rates of toll, upon which this estimate was founded.

They, also, estimated that the tolls on the Erie would amount to two million dollars in 1846, and four million dollars in 1856.

LEGISLATIVE HISTORY OF THE ENLARGEMENT OF THE ERIE CANAL.

The necessity of the enlargement was first suggested in the annual report of the Canal Commissioners, dated March 4, 1825, attributed to the able pen of Samuel Young.

The attention of the Legislature was directed to the subject of the enlargement by Governor Marcy, in his annual message in 1834.

Canal Commissioners Van Rensselaer, Bouck, Young, Earll, and Hoffman, in speaking of the enlargement in their report of 1833, remark, "that the period had arrived when, in this enlightened policy, the locks of the Erie canal, east of Syracuse, should be doubled," and "the capacity of the canal to meet the wants of the transportation must be attained by extending the lock and enlarging the canal to admit boats of greater tonnage."

Governor Marcy again called the attention of the Legislature to the importance of this enlargement in his annual message of 1835.

That part of Governor Marcy's message relating to canals, was referred to the Assembly Canal Committee, of which Hon. Charles Humphrey was chairman, who reported a bill for improving the Erie, authorizing the Canal Commissioners to construct a second set of locks, of such dimensions as they should deem proper, from Albany to Syracuse, and adapt the canal to them, &c.

This bill was referred to a select committee, consisting of Mr. R. H. Morris of N. Y., Mr. Beardslee of Herkimer, and Mr. F. M. Haight; and being reported complete by Mr. Haight, passed the Assembly. Ayes 66, noes 34; and Senate—ayes 22, noes 1; Messrs. Edwards, Foster, Ganesvort, Hubbard, McDonald, Mack, Sudam, and others, being in the affirmative. The bill was approved by Governor Marcy, and became a law May 6, 1834.

On January 30, 1835, a special report was made to the Legislature, by Van Rensselaer, Hoffman, Young, Bouck, and Earll, Canal Commissioners, relative to the improvement of the Erie canal, in which they remarked that to secure the cheapening of transportation by reducing the rates of toll and expenditures, the enlargement would be delayed, and the business of the country so rapidly increasing, would seek other channels, and with the tolls be lost to the State.

This subject was referred to the Canal Committee, of which David Wager, of Oneida, was chairman, who reported in favor of the proposed enlargement. The following are extracts from this report: "The magnitude of the work, and the present crowd of business upon the canal, make it necessary to commence it without delay. By doubling the locks, and increasing the capacity of the canal for boats of 120 tons burthen, th charges for transportation would be reduced more than 50 p cent., exclusive of tolls, which would give a reduction of over 5 per cent. in the aggregate expense, and the canal would be in condition to accommodate more than four times the business Mr. Wager thereupon reported a bill, which passed the Assembly —ayes 86, noes 16; and Senate by a unanimous vote, Colonel Young (who was then a member of the Senate) being among the number. The bill, being approved by Governor Marcy, became a law May 11, 1835. The Canal Board was authorized to determine the dimension of the canal and locks.

The Canal Board fixed these dimensions Oct. 20, 1835.

Governor Marcy, in his message to the Legislature in the session of 1836, remarked, that "the canal is to be made seven feet deep, and seventy feet wide on the surface."

The Canal Board made a special report to the Legislature, January 26, 1836, in which they remarked that the Board, after careful examinations of the information derived from the surveys and facts submitted to their consideration, decided that the canal should be enlarged to 7 feet depth, and 70 feet surface; and in the present month they agreed on a lock 110 feet long between quoins, and 18 feet width of chamber."

In speaking of the first law, (1834,) they said that "an additional set of locks would increase the capacity of the canal about 80 per cent., and might prolong the absolute necessity of enlarging the canal a few years." Also, that "the enlargement of the canal and locks to the proposed dimensions would lesson the expense of transportation, exclusive of tolls, about 50 per cent." This difference, applied to the business of the past year, assuming the expense of transportation to be 20 per cent. greater than the tolls, would be a saving of $826,007\frac{81}{100}$, and in ten years, calculating the same rate of increase to the tolls that has taken place in the past ten years, it would amount to $12,793,221.

The Senate passed a resolution in the session of 1837, asking if the enlargement should be commenced so as to complete the same before the time fixed in the law of 1835, and if the estimate submitted would cover the expense; if not, to state the additional cost.

The Canal Board replied that it ought to be completed before the time fixed in the law of May 11, 1835, and that the cost would materially exceed the estimate of $12,416,150.

Governor Marcy, in his message to the Legislature of 1838, says: "The unfinished works of internal improvements, including the enlargement, will involve an expenditure of $15,000,000. The best interests of the State appeal to you with great earnestness to provide for the early completion of this important improvement. I respectfully commend this subject to your serious consideration, as one which not only connects itself with the welfare of this State, but with that of the extensive regions of the west."

The Canal Commissioners, on February 13th, 1838, by a resolution of the Assembly, reported, that if funds were provided a large amount of work would of necessity be put under contract.

In 1838, the political power of the two Houses was divided—one party having the ascendency in the Senate, and the other in the Assembly.

On the 13th March, 1838, G. W. Patterson, chairman of the canal committee of the Assembly, reported a bill appropriating one million dollars. The bill was amended, in the committee of the whole, appropriating a further sum of three million dollars, if, in the judgment of the Canal Commisssoners, the interests of the public would be promoted by a more rapid execution of the work. The bill passed the Assembly, April 9th—ayes 91; noes 3. This bill was reported in the Senate by D. S. Dickinson, chairman of the canal committee; but amended in the committee of the whole, on motion of David Wager of Oneida, so as to make the appropriation absolute of four million dollars. It passed the Senate, ayes 17, noes 6, and, being approved by Governor Marcy, became a law April 18, 1838.

On the 12th of April, 1838, Governor Marcy sent in a special message, recommending a law authorizing the Commissioners of the Canal Fund to issue stock to the amount of six or eight millions, for the enlargement of the Erie and completion of the Black River and Genesee Valley canals. His belief was, that "the present crisis must be regarded as one in which it is the duty of the State to stand forth in its strength, and by the use of its credit, and the sanction of its name, to shield its institutions and citizens from harm."

This message was referred in the Assembly to a select committee, consisting of Messrs. Ruggles, Floyd, Miller, Mann, Wordwell, G. W. Patterson and Hurd.

The committee, made a report, April 17th, in which they "most frankly declare, that while they do not anticipate such a state of events as his excellency supposes possible, they at the same time consider it inconsistent or improper to devolve upon the Canal Board, or any other ordinate and merely administrative officers, so vast and dangerous a delegation of the sovereign power."

On the 16th April, 1838, a bill passed the Senate, authorizing the Commissioners of the Canal Fund to issue stocks, as follows: For the Erie enlargement four million dollars; for Genesee Valley canal two million dollars; and for the Black River one and one-half million dollars. It was ordered to a third reading by the following vote:

FOR THE AFFIRMATIVE.

Mr. J. Beardsley,
S. Beardsley,
D. S. Dickinson,
Downing,
Edwards,
Hunter,
Mr. Johnson,
H. F. Jones,
J. P. Jones,
Lawyer,
E. P. Livingston,
Loomis,
Mr. Powers,
Skinner,
Sterling,
Van Dyck,
Wager.
Total—17.

FOR THE NEGATIVE.

Mr. Beckwith,
Hull,
Huntington,
Lacy,
Lee,
Mr. A. H. Livingston,
Maynard,
Moseley,
Spraker,
Tallmadge,
Mr. Verplanck,
Works,
Young.
Total—13.

The two Houses not agreeing, the bill was lost.

The Canal Commissioners reported, in January, 1840, that the work under contract for the enlargement was $10,683,556, and the amount necessary to complete the existing contracts for the enlargement was $6,500,991. The additional appropriations for that object, made by act, chap. 117, Laws of 1840, were two millions, and by act, chap. 194, Laws of 1841,........ $2,150,000
this fell short of completing their contracts......... 2,350,991
of finishing the Black River canal.................. 1,680,095
and of completing the Genesee Valley canal......... 3,188,761

Making a total to complete existing contracts....... $7,209,847

After deducting the appropriations made in 1840 and 1841 for the Black River and Genesee Valley canals, this left the amount to complete existing contracts $5,609,848.

The Commissioners of the Canal Fund add: "It will be seen, that while to one political party must be conceded the credit of originating all the more recent projects of internal improvements, and passing the laws authorizing the construction of the Erie canal enlargement, the Black River and Genesee Valley canals, which have added so much to the public debt, another and adverse party must content themselves with the more humble merit of contributing their aid to carry out the measures which they found already in progress, and providing, or helping to provide the necessary means to preserve the public faith and fulfill the contracts and obligations made and incurred by their predecessors in power."

Black River and Genesee Valley canals—Legislation.

The act authorizing the construction of the Genesee Valley canal passed in 1836. The bill was introduced in the Assembly by Mr. Borland, chairman of the canal committee. The bill passed the Assembly, ayes 81, noes 27, and Senate, ayes 15, noes 11, and approved by Gov. Marcy and became a law May 6, 1836.

The bill authorizing the construction of the Black River canal was reported by Mr. L. Beardsley, chairman of the canal committee of the Senate. The vote upon the third reading of the bill was:

FOR AFFIRMATIVE.

Mr. L. Beardsley,
Downing,
Fox,
Gansevoort,
Griffin,
Hubbard,

Mr. Huntington,
Kemble,
Lawyer,
Livingston,
Mack,
Maison,

Mr. Seger,
Spraker,
Sterling,
Wager,
Willis,
Total—17.

FOR THE NEGATIVE.

Mr. Armstrong,
J. Beardsley,
Edwards,
Hunter,

Mr. Powers,
Van Schaick,
Beckwith,

Mr. Bishop,
Loomis,
Young.
Total—10.

The bill was referred to the canal committee of the Assembly, of which Mr. Borland was chairman, and was reported to the House by Mr. Stryker, of Oneida; it passed the Assembly, ayes 82, noes 18, and being approved by Gov. Marcy, became a law April 19, 1836.

Col. Young alluded to the Legislature of 1836 as follows: "In one session (that of 1836) about nine millions were added to the liabilities of the State. This was the session that littered the last brood of banks, together with two canals, and the embryo of the New York and Erie railroad."

The amount necessary to complete the Black River and Genesee Valley canals, January 1, 1842, was $3,258,856.

For a complete report of the extent of the salt trade, in this and other States, see Assembly Doc., vol. 2, No. 16, for 1842.

PROGRESS OF THE CANALS IN 1842.

The stop law, suspending expenditures on public works, passed March 29, 1842. This law authorized one-half the proceeds of 1 mill tax on real and personal property of 1843, to pay loans and canal debt.

Financial condition of canals.

State debt for public works Sept. 30, 1842	$19,613,359 00
Sum required annually to pay interest on same	1,058,692 00
Amount of principal to be paid within six years	8,169,712 00
Annual canal revenue from all sources	1,798,692 00
Annual canal expenditures and all charges therefrom	1,730,188 00
General Fund and railroad debt	5,124,389 00
Interest annually on same	282,928 00
Total canal and treasury debt	24,737,749 00
Total interest on same annually	1,341,620 00
Total amount of work under contract, including that done and to be done on enlargement	13,022,787 00
Total amount remaining to be done on same	2,315,837 00
Total amount under contract, including that done and to be done on Genesee Valley canal	4,224,700 00
Total amount done and to be done on Black River canal	1,760,046 00
Total amount remaining to be done on same	84,688 00

The Comptroller, in his report for 1842, stated that the Chenango canal cost $2,400,000, and in six years had run the State in debt $726,848 more than its earnings. On the Chemung canal, that cost $316,000, there had been expended, since its completion, including interest, $617,000 more than it had yielded in tolls; that in ten years there had been expended $290,000 for rebuilding locks. The Crooked Lake canal cost the State, since its completion, $97,965 more than it had contributed in tolls, and finally that the State had sacrificed, in keeping the lateral canals in operation, including Chemung locks, $2,522,577.

The Commissioners, in their report for 1842, stated that the cost of construction and maintenance of the *lateral canals*, up to September 30, 1842, was $11,174,262, and total expended for enlargement $12,727,819, including surplus tolls; amount paid for interest and proceeds of loans, $.

Rebuilding Chemung Locks.

The rebuilding of locks was authorized by act, passed April 27, 1840, chap. 176; the plan for rebuilding left to the discretion of the Commissioners, who caused three estimates and plans to be made, as follows: Composite lock 90x15, $7,263; wooden lock 90x15, $4,390; composite lock 110x18, $11,536; wooden lock 110x18, $5,803. The Commissioners adopted the wooden lock 90x15, $4,390. Fifty-three were put under contract, September 15, 1839, and all brought into use in the spring of 1842.

Navigation.

The average time in making a trip from Albany to Buffalo, in
1841, was 19 days; average burthen of boats $54\frac{9}{12}$ tons; in
1842, was 15 do do do $65\frac{6}{12}$ tons.

Enlargement work.

Combined locks Nos. 3 to 18 inclusive, at Waterford, brought into use in May, 1842.

Rochester aqueduct completed April 1, 1842, at a cost of $445,387. Its whole length is 800 feet, with 7 arches, each 52 feet span. The water-way is 45, and parapet wall 10 feet, making whole width of trunk 65 feet. Its height is 27 feet; and contains 17,000 cubic yards masonry, quarried at Onondaga.

Lockport locks: estimated cost, at contract prices, $610,978. The north tier was brought into use April 1st, 1843. The work consists of five combined double locks $55\frac{10}{12}$ feet lockage, and total length 636 feet.

Supply of Water.

O. W. Childs, (when the water was unusually low,) made accurate gauges of all the streams, from Geddes to Seneca river, that were to be used for enlarged canal feeders. As the result proved an insufficiency, Mr. Childs devised a plan for making a reservoir of Skaneateles lake, by constructing a bulkhead and lowering the outlet five feet, at a cost of $14,927. No immediate action was taken, as work had been suspended.

Genesee Valley Canal.

Was completed, 52 miles to Dansville, November 1st, 1842.

Progress of the Canals in 1843.

Financial.

Canal debt of each canal, up to September 30th, 1843, a follows:

Erie and Champlain canals	$2,055,148
Erie canal enlargement	9,343,000
Oswego canal	421,304
Cayuga and Seneca canal	237,000
Chemung canal	641,600
Crooked Lake canal	120,000
Chenango canal	2,417,000
Black River canal	1,493,000
do temporary loan	18,967
Genesee Valley canal	3,553,000
Oneida Lake canal	50,000
Improvement Oneida river	61,276
Total	$20,411,291

Classified as follows:

At 5 per cent	$14,872,009	Interest	$743,600
6 do	1,892,145	do	112,762
7 do	3,647,136	do	255,299
Total	$20,411,291	Total	$1,111,662

Total amount tolls received on all the canals, from 1817 to September 30, 1843, was		$24,878,602
For maintenance same period:		
Superintendents of repairs	$6,246,607	
Collectors and inspectors	574,650	
Weigh masters	77,316	
Miscellaneous	747,847	
		7,646,420
Surplus from tolls after paying all expenses		$17,232,182
Deduct interest on loans	$10,635,967	
Received interest on investments	2,022,067	
		8,613,900
Net proceeds after paying interest on loans		$8,618,282

The Original Cost of Canals,

As given in the Comptroller's report, dated January 3d, 1844, with the estimated cost of same:

CANALS.	Cost construction.	Estimated cost—engineer's prices.
Erie canal	$7,143,789 86	$4,926,738 00
Erie enlargement canal	13,291,616 00	*13,291,616 00
Champlain do	1,257,604 26	871,000 00
Oswego do	565,437 35	227,000 00
Cayuga and Seneca canal	236,804 74	153,871 00
Crooked Lake do	156,776 90	119,198 00
Chemung do	641,600 58	331,125 00
Black River do	1,511,967 00	1,068,437 00
Genesee Valley do	3,555,000 00	2,002,285 00
Oneida Lake do	50,000 00	40,000 00
Oneida river improvement	59,432 57	100,050 00
Chenango canal	2,417.000 00	1,960,456 00
	$30,885,029 26	$25,091,776 00

Acts passed, not given in foregoing.

For payments of arrearages to contractors, March 16th, 1843, appropriating $320,000.

For prohibiting members of Canal Board and engineers becoming interested in contracts, April 18th, 1843.

For increasing revenues of the State, by extending the market for salt, coal and lead, April 18th, 1843.

For relief of contractors, allowing prospective damages, April 18th, 1843.

For paying arrearages to contractors, and appropriating $300,000, April 18th, 1843.

Business of the Canals.

By dividing twenty years into periods of four years each an idea can be formed of the increase of lockages, as follows:

Up to and including	1827,	lockages increased	112	per cent.
do	1831,	do	25.22	do
do	1835,	do	58.42	do
do	1839,	decreased	6.06	do
do	1843,	further do	5.15	do

---

* The estimated cost of enlargement, at engineer's prices, was $23,402,863.23; but, for comparison, the same is inserted of work done to date on enlargement. It appears that the cost of construction was 23 per cent. more than the estimated cost.

The decrease was owing to increased size of boats. The tonnage of boats was from 60 to 70 tons, in 1843, and the heavi ever transported up to this year was 82 tons, and had a draug of 3½ feet of water. The average draught of boats of 60 to 7 tons was 2¾ and 3 feet. The time consumed in a trip fro Albany to Buffalo and return was 18 days. Twelve per cent. o all the boats carried cargoes weighing more than 60 tons, and drew from 2¾ to 3 feet water.

Progress of the Canals in 1844.

Actual cost of Crooked Lake canal, exclusive of engineerin and extra allowances, as given by Jno. Van Nortwick, at $137,340; average cost of each lock, $1,744; 1 mile canal, $9,487; and 1 bridge, average $135. This was in answer to an Assembly resolution.

Expenditures for support of Government are made chargeab on the General Fund. In 1814 this fund had a capital o $4,396,943.97. The Legislature continued its annual appropriations upon the General Fund until the original capital was exhausted, and a debt created in January, 1845, of $5,634,507.

Extra Allowances.

From 1826 to 1845 nearly $1,000,000 were paid as extra allowances to contractors, beyond the amount for which they agreed to do the work; and on the 1st January, 1845, there were claims of nearly $1,000,000 preferred, growing out of the refusal to permit certain contractors to finish their work. Over $500,000 extra allowances were made by the Canal Board on the Chenango canal, under the Laws of 1836 and 1837; and between Albany and Schenectady, $139,839, under the Laws of 1838 and 1839.

Tonnage of Boats.

The total number of boats navigating the canals Jan. 1st, 1845, was 2,504, classified as follows: 3 of 90 tons burthen, 1 of 85, 515 of 60, 478 of 50, 286 of 70, 358 of 65, 340 of 55, 46 of 75, and 12 of 80 tons burthen. The average of 378 boats, built in 1844, was 64 tons burthen; the average of 2,126 boats, built previous to 1844, was 55 tons burthen; an increase of about 20 per cent. in tonnage.

PROGRESS OF THE CANALS IN 1845.

Enlargement Work.

Of the 49 double sets of locks located between Albany and Syracuse, 29 sets and 3 single locks were completed. Of the enlarged canal, 98 miles were completed and in use, at a cost of $3,685,438, seventy-six locks finished at a cost of $2,560,634, making the total cost of work completed and in use prior to April 1st, 1842, $9,361,442, the amount of work not in use $1,245,035, and the total amount of finished and unfinished, $12,436,256.

O. W. Childs, chief engineer, surveyed an independent line for the enlargement across the Cayuga marshes, contemplating the crossing of Seneca river by an aqueduct, located upon a level of the same elevation as that at the west side of the marshes above the lock, making the bottom of canal from 2½ to 3 feet above the level of the marsh. He also made an estimate of the cost of doubling all the locks west of Syracuse, (except guard locks at Pendleton, Tonnawanda, and Black Rock,) at $1,599,664.

Reduction in Rates of Toll.

The following statement shows the extent of the reduction in the rates of toll since 1832 up to 1846.

Quantity.	Kind.	1832.	1834.	1836.
1,000 lbs....	Merchandise, toll Albany to Buffalo..	$5.08 2-10	$3.26 7-10	$2.36
1,000 lbs....	Flour and provisions, do ..	2.54	1.62 85-100	1.45 2-10
30 tons	Merchandise, do ..	304.92	196 02	141.57
50 tons	Flour do ..	254.10	163 35	145.20

Chemung Canal.

All the locks were rebuilt under act chap. 176, Laws of 1840.

Crooked Lake Canal.

The rebuilding of all the locks under contract Jan. 1st, 1846.

Cost of Canals, including Loans and Deficiencies paid from the Treasury.

The following statement shows the sums paid from the treasury, and from the Erie and Champlain Canal Fund, on account of deficiencies in the revenue of the lateral canals, from 1817 to Sept. 30th, 1845, as per report of Commissioners Canal Fund, dated Jan. 7th, 1846, and the number of years each canal has been in operation:

Canals.		Years in operation.	Amounts of Loans, Deficiencies, and Construction.
Erie and Champlain, (including enlargement)		25	$53,512,594
Oswego canal,	deficiencies	16	341,613
Cayuga and Seneca,	do	16	185,666
Chemung canal	do	13	441,171
Crooked Lake canal,	do	12	126,607
Chenango canal	do	9	1,084,773
Black River canal	do	6	432,791
Genesee Valley canal	do	7	1,013,515
Oneida Lake canal	do	5	22,954
River improvement,	dificiencies	6	16,358
Sale of lands appropriated to the Oswego			213,087
Amount of loans for the lateral canals			9,304,180
Total expended for all the canals			$66,695,315
Deduct receipts, all sources, Erie and Champlain			56,195,630
Showing a loss on canals alone of			$10,499,685

Total receipts by Commissioners Canal Fund from 1817	$72,148,786
Total expenditure by Commissioners Canal Fund from 1817	69,436,056
Showing a gain on management of Canal Funds.	$2,712,730

(In the above receipts, $29,638,887 were for tolls, and the expenditures for repairs, collection, &c., $7,962,603, showing a revenue of $21,676,284.)

Puddling under Contracts, 1842.

Messrs. O. W Childs and W. J. McAlpine testified before Canal Board that contractors were not entitled to 25 per cent. compression on puddled earth estimated as lining, but should be paid for the labor of puddling at their contract prices, and 25 per cent. compression the same when used in embankment.

PROGRESS OF THE CANALS IN 1846.

Jonas Earll, Jr., one of the Canal Commissioners, and President of the Board, died Oct. 28, 1846, and on the 3d December, John T. Hudson was appointed by the Governor for the unexpired term.

O. W. Childs, chief engineer, by request of the Canal Commissioners, acted during the interim as Canal Commissioner.

The floods of the Oswego river carried away a portion of the Horse-shoe dam and west abutment, March 26, 1846, and excavated a large channel inland, 60 feet wide and from 12 to 16 feet deep. In this emergency the services of Garrett C. Sweet were obtained, who, by his extraordinary skill and experience, checked the breach by running down obliquely a line of cribs, forcing the floods by degrees over the unimpaired portion, and thus saving, contrary to the expectations of the canal officials, this fine structure and one-quarter the season of navigation.

Deposits.

The total amount deposited in the banks from 1824 to 1846, inclusive, was $42,651,458, and the amount of interest received, including interest on investments of surplus stocks, was $2,376,066.

Cost of Chenango canal.

For construction	$2,404,653
Interest on loans	1,239,618
Repairs	173,534
Collection and inspection	13,122
Miscellaneous	17,483
	$3,848,411
Deduct tolls received from 1837	170,281
Total paid from the Treasury	$3,678,130

PROGRESS OF THE CANALS IN 1847.

Nathaniel S. Jones resigned the office of Canal Commissio November 1st, and Thomas Clowes was appointed by the Leglature on the 15th to fill the vacancy.

Supply of Water, Middle Division.

In pursuance of a resolution of the Canal Board, September 20, 1847, O. W. Childs, chief engineer, submitted a report on the practicability, expense and utility, of constructing reservoirs on the Limestone and Chittenango creeks and Cazenovia lake, to supply the Rome level. The following statement gives the result:

Reservoir.	Greatest depth.	Average depth.	Highest embankment.	Area flowed.	Cubical contents. Cubic feet.	Estimated cost.
De Ruyter	65	24	75	580	604,517,540	$84,440
Cazenovia Lake..	5	5	..	1,178	257,483,100	5,123
Erieville	46	21½	56	314	292,438,290	43,416
					1,154,438,290	$132,979

equal to 5,240 cubic feet per minnte during 153 days, from June to October inclusive. The plan for Cazenovia lake contemplated the cutting down of the outlet five feet, and the drawing of that depth of water from the lake.

To supply that portion, when enlarged, between west end Fort Plain level to the Schoharie creek, a feeder was proposed to extend 3¾ miles above Minden dam to foot lock No. 33, the water to be taken from the Mohawk river by a dam at East creek, and conveyed through a feeder 4¼ miles long, at an estimated cost of $122,703.

The quantity required for the long level, when enlarged, (exclusive of the Utica weigh lock,) and for the daily furnishing of 200 locks at each end, was 20,326 cubic feet per minute. From Minden feeder to Schoharie creek, (other than from the Mohawk river at Minden,) 3,462 cubic feet per minute were required, and for the supply of Black River canal and feeder, (50 lockages per day,) 6,970 cubic feet, making a total quantity of 30,758 c. feet per minute. The supply of this demand, obtained from the following sources, was as follows:

From present feeders on Rome level, including that at Rome and Steel's creek, cubic feet per minute	9,254
From reservoirs above stated	5,240
do Black river canal	16,000
do do do do lockages and leakage	2,100
Total	32,594

Enlargement.

The act of May 12, 1848, appropriated $550,000 for the enlargement.

The plan of enlargement for the Fort Plain level, was the raising of the bottom two feet higher than the old canal.

The Canal Board, accompanied by O. W. Childs, chief engineer, and John D. Fay, resident engineer, met at Buffalo, and after thoroughly inspecting the facilities of transhipment, decided on extensive improvements of Buffalo harbor.

Scientific Report of O. W. Childs, chief engineer, on supply of Water from Lake Erie to Seneca river, for enlarged canal.

In answer to a resolution of the Canal Board, dated April 12th, 1841, directing the chief engineers to report the dimensions and declivity which should be given to that part of the canal when enlarged, between Lockport and Rochester, to supply at all times the canal with water to the Seneca river, without resort to Seneca river, O. W. Childs, by request of Daniel P. Bissell, on behalf of the then Canal Commissioners, submitted, December 30th, 1847, the following report, from which the following important and useful extracts are taken:

"It is perhaps due to the engineers embraced in the resolution, to state, that the paper was drawn up by me in the fall of 1841, with reference to submitting it at the next meeting with my associates, for discussion and amendment; this, owing to the press of other business, and the little prospect of an immediate progress of the enlargement of that part of the canal, was never done, and no further action was had under the resolution."

"Since the date of the resolution, the formulæ used have been tested by the Croton aqueduct, and the quantity conveyed was about 15 per cent. greater than that shown by the results of the application of the formula." This, however, passes over a smoother surface and presents less impediments than the bottom and sides of the canal."

"The first twelve miles east of Lockport have now an average depth of about six feet, and diminish to five feet in passing 36 miles east.".

(Paper A.)

* * "Preferring to err in favor of providing for a larger than a smaller quantity, the number of lockages is assumed at 200 in 24 hours, or one in seven minutes. The chamber of an eight feet lift lock contains 16,320 cubic feet water, and the lockage would amount to 2,267 cubic feet per minute."

"In July last, measurements were made to ascertain the quantity consumed by the present canal, between Wayneport and Pitt lock, a distance of 36 miles. The following statement embraces the results, viz :

PLACES.	Distance, miles.	Quan'y passing per minute.	Loss per mile per minute.	Average loss per mile per minute.
At Wayneport....................	0.00	3,349	....	....
On Palmyra level..................	8.34	2,442	108.75	....
On Clyde level....................	27.68	1,466	35.26	....
Total........................	32.02	....	....	52.27

Deducting 321 feet lockage water at Pitt lock from the quantity passed, it leaves a loss per minute, from evaporation, leakage and filtration, of 84.05 cubic feet per mile.

"The average quantity consumed on that part of the canal between Pittsford and Lockport, as measured by Mr. Barrett at various points, and repeated daily between the 30th September and 17th July, was 73 cubic feet per min. per mile."

"For the sake of round numbers, 85 cubic feet per min. per mile are taken in the following calculations as the quantity consumed by filtration, leakage and evaporation, which, for a distance of 122 miles, gives total loss 10,370 cubic feet per min."

"Admitting the loss from filtration through the bottom and sides of the canal, and from leakage at the structures to be as thesquare root of the depth, and as the area of the surface pressed; then the quantity required for the enlarged canal will be to the old as $223\frac{54}{100}$: 100, or $123\frac{54}{100}$ per cent. greater, or 190 cubic feet per min. per mile for the enlarged canal. Adding to this 2,267 lockage water at Pitt lock, makes the whole quantity required 25,448 cubic feet, or 208.59 cubic feet per minute per mile."

The German hydraulician, M. Eytelwein, is among the more modern cultivators of this science. His numerous experiments are said to lead very nearly to the same practical conclusions as those of Bossut and Du Buat. His work, which was published in 1815, evinces as well the labor which he bestowed on this subject, as the care and skill which he practiced in his experiments, and the ability with which his deductions were made. He proposes no alteration in the formula of De Prony, except the numerical of the co-efficients, which is so small as to produce but a trifling effect upon the results, within the limits of ordinary practice. De Prony gave to the equation the form $av+bv^2=RI$, in which a and b are constant quantities, determined by experiment. According to De Prony a=0000444499, and by Eytelwein, 0000242651.

De Prony's numerical value of b=0000942772, and Eytelwein's=0001114155. v represents the mean velocity; R the mean radius, or the area of the section divided by that portion of the perimeter in contact with the water, and I, the fall divided by the length. By this formula every direct cause that can operate to produce an effect upon the motion of fluids, appears to be embraced, and differs from that deduced from the experiments of Coulombe by Gerard, mainly in the co-efficient, as the term expressing the resistance, RI, in the formula of Eytelwein and De Prony, represents nearly the same thing as $\frac{gwz}{hx}$ in that of Gerard.

Mr. Childs, after giving an interesting and graphic sketch of the earliest experiments and advancement in this branch of science, concludes as follows: "The equation of M. De Prony, on account of its being more modern and simple in its application, with the co-efficients of Eytelwein, are used in constructing the following table, with forms varying to suit the cases to which they are applied."

"In the following calculations the canal between Rochest and Lockport is divided into sections, each of which, in the fir table, is considered uniform in its prism, consequently the to and bottom planes of the volume are supposed to be parallel."

No. 1.

Tabular view of the dimensions and inclination that may be given to the prism of the canal, and the velocity with which the water, having a uniform depth throughout, will move, to convey 13,290 *c. feet per minute, at Rochester, increasing this quantity at the rate of* 190 *c. feet per minute on each mile west to Lockport. Calculated from the equation before alluded to, of the form* $av+bv^2=Ri$. $a=0.0000242651$. $b=0.0001114155$.

QUANTITIES.	Depth.	Bottom width.	Surface width.	Sectional area in feet.	Perimeter.	R. or area divided by perimeter.	$\frac{av+bv^2}{R}$ into the distance=Fall.	Distance in feet.	Velocity in feet per second.
13.290.	8.00	38.00	70.00	432.00	73.78	5.855	.04027	5.641.	.05127
13.493.	8.00	38.35	70.35	434.80	74.13	5.865	.04036	5.583.	.05172
13.694.	8.00	38.70	70.70	437.60	74.48	5.875	.04045	5.527.	.05215
13.893.	8.00	39.05	71.05	440.40	74.83	5.885	.04053	5.472.	.05256
14.090.	8.00	39.40	71.40	443.24	75.18	5.895	.04063	5.419.	.05298
14.285.	8.00	39.75	71.75	446.08	75.53	5.905	.04072	5.380.	.05337
14.478.	8.00	40.10	72.10	448.88	75.88	5.915	.04081	5.341.	.05375
14.670.	8.00	40.45	72.45	451.70	76.23	5.925	.04090	5.304.	.05412
14.860.	8.00	40.80	72.80	454.50	76.58	5.935	.04096	5.309.	.05449
15.051.	8.00	41.15	73.15	457.30	76.93	5.945	.04106	5.216.	.05483
15.239.	8.00	41.50	73.50	460.32	77.28	5.955	.04118	5.196.	.05517
15.425.	8.00	41.85	73.85	463.18	77.53	5.965	.04127	5.161.	.05550
15.611.	8.00	42.20	74.20	466.04	77.98	5.975	.04136	5.138.	.05582
15.795.	8.00	42.55	74.55	468.90	78.33	5.985	.04144	5.104.	.05614
15.978.	8.00	42.90	74.90	471.82	78.68	5.995	.04149	5.056.	.05644
16.160.	8.00	43.25	75.25	474.72	79.03	6.005	.04158	5.035.	.05673
16.340.	8.00	43.60	75.60	477.62	79.38	6.015	.04167	5.004.	.05701
16.520.	8.00	43.95	75.95	480.52	79.73	6.025	.04174	4.981.	.05729
16.699.	8.00	44.30	76.30	483.42	80.08	6.035	.04185	4.962.	.05757
16.877.	8.00	44.65	76.65	486.36	80 43	6.045	.04222	4.966.	.05783
17.054.	8.00	45.16	77.16	489.28	80.78	6.055	.04199	4.919.	.05809
17.230.	8.00	45.52	77.52	492.20	81.13	6.065	.04207	4.889.	.05834
17.404.	8.00	45.89	77.89	495.12	81.48	6.075	.04216	4.879.	.05855
17.578	8.00	46.25	78.25	498.04	81.83	6.085	.04224	4.859.	.05882

No. 1.—Continued.

QUANTITIES.	Depth.	Bottom width.	Surface width.	Sectional area in feet.	Perimeter.	R. or area divided by perimeter.	$\frac{av+bv^2}{R}$ into the dis-t'nce=Fall.	Distance in feet.	Velocity in feet per second.
17.752.	8.00	46.62	78.63	501.04	82.18	6.095	.04232	4.849.	.05903
17.926.	8.00	47.00	79.00	504.00	82.77	6.105	.04241	4.831.	.05978
18.100.	....	47.37	79.37	506.96	83.14	6.115	.04253	4.826.	.05950
18.273.	....	47.74	79.74	509.92	83.51	6.125	.04261	4.807.	.05972
18.445.	....	48.11	80.11	512.90	83.88	6.135	.04264	4.792.	.05993
18.617.	....	48.48	80.48	515.88	84.25	6.145	.04279	4.790.	.06014
18.790.	....	48.85	80.85	518.86	84.62	6.155	.04280	4.773.	.06035
18.962.	....	49.22	81.22	521.84	84.99	6.165	.04289	4.756.	.06055
19.133.	....	49.59	81.59	524.82	85.36	6.175	.04296	4.746.	.06076
19.303.	....	49.96	81.96	527.80	85.73	6.185	.04306	4.759.	.06095
19.473.	....	50.33	82.33	530.90	86.10	6.195	.04315	4.732.	.06113
19.643.	....	50.74	82.74	533.92	86.51	6.171	.04293	4.719.	.06131
19.813.	....	51.12	83.12	536.94	86.89	6.179	.04352	4.710.	.06149
19.982.	....	51.42	83.42	539.36	87.19	6.186	.04362	4.701.	.06167
20.150.	....	51.87	83.87	542.98	87.64	6.195	.04370	4.692.	.06184
20.318.	....	52.26	84.26	546.06	88.03	6.203	.04403	4.709.	.06201
20.487.	....	52.64	84.64	549.12	88.41	6.211	.04399	4.695.	.06217
20.656.	....	53.02	85.02	552.18	88.79	6.218	.04402	4.695.	.06234
20.825.	8.00	53.40	85.40	555.24	89.17	6.226	.04410	4.678.	.06251
20.994.	....	53.78	85.78	558.30	89.55	6.234	.04419	4.670.	.06267
21.162.	....	54.16	86.16	561.40	89.93	6.242	.04425	4.658.	.06282
21.330.	....	54.54	86.54	564.48	90.31	6.250	.04433	4.657.	.06297
21.498.	....	54.92	86.92	567.56	90.69	6.258	.04442	4.657.	.06312
21.665.	....	55.33	87.33	570.66	91.10	6.264	.04456	4.660.	.06327
21.832.	....	55.72	87.72	573.77	91.49	6.271	.04474	4.651.	.06341
21.999.	....	56.11	88.11	576.88	91.88	6.278	.04474	4.651.	.06355
22.166.	....	56.50	88.50	580.00	92.27	6.285	.04480	4.647.	.06369
22.333.	....	56.89	88.89	583.12	92.66	6.292	.04490	4.639.	.06383
22.499.	....	57.28	89.28	586.24	93.05	6.300	.04498	4.638.	.06396
22.665.	....	57.67	89.67	589.38	93.44	6.307	.04507	4.638.	.06409
22.831.	....	58.06	90.06	592.50	93.83	6.314	.04516	4.637.	.06422
22.997.	....	58.45	90.45	595.62	94.22	6.321	.04525	4.630.	[illegible]

23.163.	....	58.84	90.84	598.74	94.61	6.328	.04538	4.640.	.06447
23.329.	....	59.23	91.23	601.98	95.00	6.336	.04546	4.639.	.06458
23.496.	....	59.65	91.65	605.22	95.42	6.342	.04558	4.640.	.06470
23.663.	....	60.04	92.04	608.32	95.81	6.349	.04566	4.639.	.06483
23.830.	....	60.43	92.43	611.52	96.20	6.356	.04575	4.638.	.06494
23.996.	....	60.82	92.82	614.70	96.59	6.364	.04583	4.645.	.06506
24.163.	....	61.17	93.17	617.90	96.94	6.374	.04587	4.641.	.06517
24.329.	....	61.62	93.62	621.10	97.39	6.377	.04601	4.643.	.06528
24.490.	....	62.01	94.01	624.30	97.78	6.384	.04610	4.643.	.06539
24.663.	....	62.40	94.40	627.50	98.17	6.391	.04619	4.642.	.06550
24.830.	....	62.79	94.79	630.70	98.56	6.399	.04626	4.648.	.06561
24.997.	....	63.24	95.24	633.96	99.10	6.397	.04641	4.647.	.06571
25.164.	....	63.63	95.63	637.18	99.40	6.409	.04647	4.647.	.06582
25.331.	....	64.05	96.05	640.44	99.83	6.415	.04663	4.650.	.06589
25.450.	....	64.46	96.46	643.68	100.24	6.420	.03183	3.196.	.06566
							3,06784 ft. fall		

No. 2.

Tabular view of the necessary dimensions of the prism of the canal, and the inclination that should be given to the surface of the water. (with a horizontal bottom plane,) in order to convey 13,290 cubic feet per minute at Rochester, increasing said quantity by 190 c. feet per minute, west to Lockport, calculated from the formula

$$ds = \frac{w - \frac{v^2x}{g}}{z(av+bv^2)}dh;$$

in which w = area of the section; v the velocity; x the width of water at surface; z that portion of the perimeter of the section in contact with the water; g the accelerating force of gravity; h the depth of the water; and ds a differential quantity to be integrated from $h_{\circ} = 8$, to h_m, the depth of water sought at the upper end, or at Lockport.

Quantities in cubic feet.	Depth or value of h.	$\frac{w}{n}$, or $l\left(\frac{w}{n}+h\right)$.	Velocity in feet per sec., or $V = \frac{Q}{0\ nh\left(\frac{w}{n}+h\right)}$.	$\frac{v^2}{2g}$	Width of surface in feet or $\frac{2w}{n} + 4h$.	Product of 4th and 5th.	Remainder of 6th from the 2nd.	$x : n$	$av + bv^2$.	Product of 8th and 9th.	Quotient of $\frac{7th}{10th}$	Distance in feet, or product of half the sum of the two first of 11th and constant difference of first.
13.290	8.00	216.00	0.5127	.004084	70.00	.28588	215.71412	36.888	.0000418	.0015419	139901.49	
	8.04	217.40	0.5094	.004032	70.16	.28288	217.11712	36.978	.0000413	.0015272	142166.78	5.641.36
13.493	8.04	217.40	0.5172	.004156	70.16	.29158	217.10842	36.978	.0000424	.0015679	138470.83	
	8.08	218.80	0.5139	.004103	70.32	.28852	218.51148	37.068	.0000419	.0015531	130693.76	5.583.26
13.694	8.08	218.80	0.5215	.004225	70.32	.29710	218.50290	37.068	.0000430	.0015939	137086.95	
	8.12	220.20	0.5182	.004172	70.48	.29404	219.90596	37.158	.0000425	.0015792	139251.49	5.526.77
13.893	8.12	220.20	0.5236	.004292	70.48	.30250	219.89750	37.158	.0000436	.0016201	135730.81	
	8.16	221.62	0.5222	.004236	70.64	.29923	221.32077	37.248	.0000431	[illegible]	[illegible]	[illegible]

14.000	8.16	221.62	0.5298	.004360	70.64	.30799	221.31201	37.248	.0000442	.0016464	134421.77	
	8.20	223.04	0.5264	.004305	70.80	.30479	222.73521	37.338	.0000437	.0016317	136505.00	5.418.53
14.285	8.20	323.04	0.5337	.004425	70.80	.31329	222.72641	37.338	.0000447	.0016690	133449.91	
	8.24	224.44	0.5304	.004370	70.96	.31009	224.12991	37.428	.0000442	.0016543	135549.91	5.380.00
14.478	8.24	224.44	0.5375	.004488	70.96	.31846	224.12154	37.428	.0000452	.0016917	132483.02	
	8.28	225.85	0.5342	.004433	71.12	.31526	225.53474	37.518	.0000447	.0016770	134583.02	5.341.32
14.670	8.28	225.85	0.5412	.004551	71.12	.32366	225.52634	37.518	.0000457	.0017145	131540.58	
	8.32	227.25	0.5379	.004496	71.28	.32046	226.92954	37.608	.0000452	.0016998	103640.58	5.303.62
14.860	8.32	223.25	0.5449	.004613	71.28	.32884	226.92116	37.608	.0000458	.0017224	131747.07	
	8.36	228.65	0.5416	.004558	71.44	.32564	228.32436	37.698	.0000453	.0017077	133702.85	5.309.00
15.051	8.36	228.75	0.5483	.004671	71.44	.33369	228.39631	37.698	.0000468	.0017643	129454.35	
	8.40	230.16	0.5449	.004613	71.60	.33029	229.82971	37.788	.0000463	.0017496	131361.28	5.216.31
15.239	8.40	230.16	0.5517	.004728	71.60	.33859	229.82141	37.763	.0000472	.0017824	128939.30	
	8.44	231.59	0.5483	.004671	71.76	.33519	231.25481	37.853	.0000467	.0017677	130846.23	5.195.71
15.425	8.44	231.59	0.5550	.004785	71.76	.34337	231.24663	37.853	.0000477	.0018055	128078.99	
	8.48	233.02	0.5516	.004727	71.92	.33997	232.68003	37.943	.0000472	.0017908	129985.92	5.161.30
15.611	8.48	233.02	0.5582	.004841	71.92	.34816	232.67184	37.943	.0000481	.0018250	127491.41	
	8.52	234.45	0.5548	.004783	72.08	.34476	234.10524	38.033	.0000478	.0018103	129398.34	5.137.79
15.795	8.52	234.45	0.5614	.004896	72.08	.35290	234.09710	38.033	.0000486	.0018484	126648.50	
	8.56	235.88	0.5580	.004838	72.24	.34950	235.53050	38.123	.0000481	.0018337	128555.43	5.104.07
15.978	8.56	235.92	0.5644	.004949	72.24	.35751	235.52490	38.140	.0000492	.0018764	125519.55	
	8.60	237.36	0.5609	.004889	72.40	.35396	237.00604	38.230	.0000487	.0018618	127299.41	5.056.38
16.160	8.60	237.36	0.5673	.005000	72.40	.36200	236.99800	38.230	.0000496	.0018962	124985.76	
	8.64	238.81	0.9638	.004940	72.56	.35845	238.45155	38.320	.0000495	.0018816	126764.76	5.035.01
16.340	8.64	238.81	0.5701	.005049	72.56	.36635	238.44363	38.320	.0000501	.0019198	124202.32	
	8.68	240.26	0.5666	.004989	72.72	.36280	239.89720	38.410	.0000496	.0019052	125981.32	5.003.67
16.520	8.68	240.26	0.5729	.005099	72.72	.37080	239.88920	38.410	.0000505	.0019397	123642.36	
	8.72	241.71	0.5694	.005039	72.88	.36725	241.34275	38.500	.0000500	.0019251	125421.36	4.981.27
16.699	8.72	241.71	0.5757	.005149	72.88	.37526	241.33474	38.500	.0000509	.0019596	123155.10	
	8.76	243.26	0.5722	.005089	73.04	.37171	242.88829	38.590	.0000504	.0019450	124934.10	4.961.78
16.877	8.76	243.18	0.5783	.005196	73.04	.37951	242.80069	38.588	.0000514	.0019687	123330.36	
	8.80	244.64	0.5748	.005133	73.20	.37573	244.26427	38.677	.0000509	.0019540	125007.30	4.966.75
17.054	8.80	244.64	0.5809	.005242	73.20	.38371	244.25629	38.677	.0000517	.0019996	122152.57	
	8.84	246.10	0.5774	.005179	73.36	.37993	245.72007	38.766	.0000512	.0019849	123794.68	4.918.94
17.200	8.84	246.10	0.5834	.005288	73.36	.38793	245.71207	38.766	.0000522	.0020235	121429.23	
	8.88	247.56	0.5799	.005225	73.52	.38415	247.17585	38.855	.0000517	.0020088	123046.52	4.889.51
17.404	8.88	247.56	0.5858	.005269	73.52	.38737	247.17263	38.855	.0000525	.0020399	121168.99	
	8.92	249.02	0.5823	.005206	73.68	.38359	248.63641	38.944	.0000520	.0020252	122771.28	4.878.80
17.578	8.92	249.02	0.5882	.005375	73.68	.39603	248.62397	38.944	.0000529	.0020601	120685.38	
	8.96	250.48	0.5848	.005333	73.84	.39231	250.08769	39.033	.0000524	.0020454	122274.33	4.859.20
17.752	8.96	250.52	0.5905	.005413	73.84	.39969	250.12031	39.034	.0000532	.0020766	120447.03	
	9.00	252.00	0.3869	.005351	74.00	.39597	251.60403	39.124	.0000526	.0020619	122025.33	4.849.44

No. 2.—Continued.

Quantities in cubic feet.	Depth, or value of h.	$\frac{w}{n}$, or $h\left(\frac{w}{n}+h\right)$.	Velocity in feet per sec., or $V=\frac{Q}{nh\left(\frac{w}{n}+h\right)}$.	$\frac{v^2}{2g}$	Width of surface in feet, or $\frac{2w}{n}+4h$.	Product of 4th and 5th.	Remainder of 6th from the 2nd.	$\frac{n}{x}$	$av+bv^2$.	Product of 8th and 9th.	Quotient of $\frac{7th}{10th}$	Distance in feet, or product of half the sum of the two first of 11th and constant difference of 1st.
17.926	9.00	252.00	0.5928	.005459	74.00	.40396	251.59603	39.124	.0000536	.0020970	119976.19	
	9.04	253.48	0.5898	.005395	74.16	.40009	253.47991	39.210	.0000531	.0020823	121556.15	4.830.64
18.100	9.04	253.48	0.5950	.005500	74.16	.40780	253.07219	39.210	.0000539	.0021134	119746.47	
	9.08	254.96	0.5915	.005436	74.32	.40400	254.55600	39.300	.0000534	.0020986	121546.47	4.825.85
18.273	9.08	254.96	0.5972	.005541	74.32	.41181	254.54819	39.300	.0000543	.0021340	119282.18	
	9.12	256.44	0.5937	.005479	74.48	.40800	256.03200	39.390	.0000538	.0021193	120809.70	4.807.28
18.445	9.12	256.45	0.5993	.005580	74.48	.41560	256.03440	39.392	.0000546	.0021508	119041.46	
	9.16	257.94	0.5958	.005515	74.64	.41164	257.52836	39.482	.0000541	.0021359	120571.30	4.792.25
18.617	9.16	257.94	0.6014	.006619	74.64	.41942	257.52058	39.482	.0000549	.0021675	118809.95	
	9.20	259.43	0.5979	.005554	74.80	.41543	259.01457	39.572	.0000544	.0021527	120338.59	4.789.98
18.790	9.20	259.43	0.6035	.005658	74.80	.42322	259.00678	39.572	.0000552	.0021844	118571.13	
	9.24	260.92	0.6000	.005593	74.96	.41925	260.50075	39.662	.0000547	.0021696	120100.13	4.773.42
18.962	9.24	260.92	0.6055	.005696	74.96	.42697	260.49303	39.662	.0000556	.0022052	118126.70	
	9.28	262.41	0.6020	.005631	75.12	.42300	261.98700	39.752	.0000551	.0021904	119655.70	4.755.64
19.133	9.28	262.41	0.6076	.005735	75.12	.43081	261.97919	39.752	.0000559	.0022221	117897.12	
	9.32	263.90	0.6041	.005670	75.28	.42683	263.47317	39.842	.0000554	.0022073	119426.12	4.746.46
19.303	9.32	263.90	0.6095	.005771	75.28	.43444	263.46356	39.842	.0000562	.0022391	117710.49	
	9.36	265.39	0.6060	.005706	75.44	.43046	264.95954	39.932	.0000557	.0022243	119239.49	4.739.00
19.473	9.36	265.45	0.6113	.005845	75.44	.43793	265.01207	39.929	.0000565	.0022559	117475.09	
	9.40	266.96	0.6078	.005739	75.60	.43386	266.52614	40.019	.0000559	.0022371	119139.12	4.732.28
19.643	9.40	266.96	0.6131	.005840	75.60	.44150	266.51850	40.019	.0000568	.0022731	117248.91	
	9.44	268.47	0.6096	.005774	75.76	.45144	268.03256	40.109	.0000563	.0022581	118698.27	4.718.94
19.813	9.44	268.47	0.6149	.005874	75.76	.44501	268.02499	40.109	.0000571	.0022902	117031.26	
	9.48	269.98	0.6114	.005808	75.92	.44095	269.53935	40.199	.0000566	.0022752	118481.26	4.710.25
19.982	9.48	269.98	0.6167	.005908	75.92	.44853	269.53147	40.199	.0000574	.0023074	116811.70	
	9.52	271.49	0.6132	.005842	76.08	.44297	271.04798	40.289	.0000569	.0022924	[illegible]	4.700.99

20.150	9.52	271.49	0.6184	.005941	76.08	.45222	271.03778	40.289	.0000577	.0023246	116595.45	
	9.56	273.00	0.6149	.005875	76.24	.44816	272.55184	40.379	.0000572	.0023096	118008.25	4.692. 7
20.318	9.56	273.03	0.6201	.005974	76.24	.45546	272.57454	40.376	.0000580	.0023418	112125.09	
	9.60	274.56	0.6167	.005908	76.40	.45137	274.10863	40.466	.0000574	.0023227	123322.37	4.709.15
20.487	9.60	274.56	0.6217	.006005	76.40	.45878	274.10122	40.466	.0000582	.0023512	116579.28	
	9.64	276.09	0.6182	.005939	76.56	.45469	275.63531	40.556	.0000577	.0023321	118191.89	4.695.42
20.656	9.64	276.09	0.6234	.006038	76.56	.46227	275.62773	40.556	.0000583	.0023644	116574.06	
	9.68	277.62	0.6199	.005972	76.72	.45818	277.16182	40.646	.0000578	.0023453	118177.55	4.695.03
20.825	9.68	277.62	0.6251	.006071	76.72	.46678	277.15324	40.646	.0000587	.0023859	116162.97	
	9.72	279.15	0.6216	.006005	76.86	.46267	278.68733	40.736	.0000582	.0023668	117748.57	4.678.23
20.994	9.72	279.15	0.6267	.006102	76.86	.46899	278.68101	40.736	.0000590	.0024034	115952.82	
	9.76	280.68	0.6232	.006036	77.04	.46490	280.21510	40.826	.0000585	.0023843	117525.10	4.669.55
21.162	9.76	280.70	0,6282	.006131	77.04	.47233	280.22767	40.824	.0000593	.0024208	115758.28	
	9.80	282.24	0.6248	.006065	77.20	.46821	281.77178	40.913	.0000588	.0024056	117131.60	4.657.79
21.330	9.80	282.24	0.6297	.006161	77.20	.47562	281.76437	40.913	.0000595	.0024343	115747.59	
	9.84	283.78	0.6263	.006095	77.36	.47150	283.30850	41.003	.0000590	.0024191	117113.18	4.657.21
21.492	9.84	283.78	0.6313	.006190	77.36	.47885	283.30114	41.003	.0000597	.0024478	115737.04	
	9.88	285.32	0.6278	.006124	77.52	.47473	284.84527	41.093	.0000592	.0024327	117090.17	4.656.54
21.665	9.88	285.33	0.6327	.006219	77.52	.48209	284.84791	41.093	.0000599	.0024614	115725.97	
	9.92	286.87	0.6293	.006153	77.68	.47797	286.39203	41.183	.0000594	.0024423	117263.24	4.659.78
21.832	9.92	286.88	0.6341	.006247	77.68	.48526	286.39474	41.183	.0000602	.0024792	115519.01	
	9.96	288.42	0.6307	.006181	77.84	.48114	287.93886	41.273	.0000597	.0024601	117043.55	4.651.25
21.999	9.96	288.44	0.6355	.006274	77.84	.48836	287.95164	41.273	.0000604	.0024928	115513.33	
	10.00	289.98	0.6321	.006208	78.00	.48424	289.49576	41.363	.0000599	.0024737	117029.45	4.650.85
22.166	10.00	290.00	0.6369	.006302	78.00	.49155	289.50845	41.360	.0000606	.0025064	115507.68	
	10.04	291.56	0.6335	.006235	78.16	.48732	291.07268	41.450	.0000601	.0024911	116845.04	4.647.05
22.333	10.04	291.56	0.6383	.006330	78.16	.49475	291.06525	41.450	.0000609	.0025243	115305.53	
	10.08	293.12	0.6349	.006263	78.32	.49052	292.62948	41.540	.0000604	.0025090	116631.90	4.638.74
22.499	10.08	293.12	0.6396	.006355	78.32	.49772	292.62228	41.540	.0000611	.0055380	115296.40	
	10.12	294.68	0.6362	.006288	78.48	.49349	294.18651	41.629	.0000606	.0025227	116615.73	4.638.24
22.665	10.12	294.69	0.6409	.006381	78.48	.50078	294.18922	41.629	.0000613	.0025518	115286.94	
	10.16	296.25	0.6375	.006314	78.64	.49655	295.75345	41.719	.0000608	.0025365	116599.03	4.637 71
22.831	10.16	296.25	0.6422	.006407	78.64	.50384	295.74616	41.719	.0000615	.0025657	115269.15	
	10.20	297.81	0.6388	.006340	78.80	.49961	297.31039	41.809	.0000610	.0025504	116574.02	4.636.86
22.997	10.20	297.81	0.6435	.006434	78.80	.50699	297.30301	41.809	.0000617	.0025796	115251.59	
	10.24	299.37	0.6401	.006367	78.96	.50276	298.86724	41.899	.0000612	.0025643	116549.24	4.636.01
23.163	10.24	299.37	0.6447	.006457	79.96	.50984	298.86016	41.899	.0000619	.0025935	115234.30	
	10.28	300.99	0.6413	.006389	79.12	.50549	300.48451	41.989	.0000613	.0025739	116742.88	4.639.54
23.329	10.28	300.99	0.6458	.006479	79.12	.51261	300.47739	41.989	.0000621	.0026075	115235.81	
	10.32	302.61	0.6424	.006419	79.28	.50826	302.10174	42.079	.0000615	.0025879	116736.24	4.639.44
23.496	10.32	302.61	0.6470	.006503	79.28	.51555	302.09445	42.076	.0000623	.0026213	115246.04	
	10.36	304.23	0.6436	.006435	79.44	.51120	303.71880	42.165	.0000617	.0026017	116738.59	4.639.69

No. 2.—Continued.

Quantities in cubic feet.	Depth, or value of h.	$\frac{w}{n}$, or $h\left(\frac{w}{n}+h\right)$.	Velocity in feet per sec., or $V = \frac{Q}{nh\left(\frac{w}{n}+h\right)}$.	$\frac{v^2}{2g}$	Width of surface in feet, or $\frac{2w}{n}+4h$.	Product of 4th and 5th.	Remainder of 6th from the 2nd.	$x \div n$	$ax + bv^2$.	Product of 8th and 9th.	Quotient of $\frac{7\text{th}}{10\text{th}}$	Distance in feet, or product of half the sum of the two first of 11th and constant difference of 1st.
23.663 ……	10.36	304.16	0.6483	.006529	79.44	.51866	303.64134	42.165	.0000625	.0026353	115250.17	
	10.40	305.78	0.6449	.006461	79.60	.51431	305.26569	42.254	.0000619	.0026152	116705.16	4.639.10
23.830 ……	10.40	305.76	0.6494	.006552	79.60	.52153	305.23847	42.254	.0000627	.0026493	115214.75	
	10.44	307.38	0.6460	.006484	79.76	.51718	306.86282	42.343	.0000621	.0026292	116700.06	4.638.29
23.996 ……	10.44	307.35	0.6506	.006576	79.76	.52450	306.82550	42.343	.0000028	.0026591	115386.97	
	10.48	308.97	0.6470	.006508	79.92	.52015	308.44985	42.432	.0000622	.0026395	116859.19	4.644.92
24.163 ……	10.48	308.95	0.6517	.006598	79.92	.52731	308.42269	42.433	.0000630	.0026732	115375.83	
	10.52	310.55	0.6483	.006529	80.08	.52284	310.02716	42.523	.0000625	.0026576	116656.81	4.640.65
24.329 ……	10.52	310.55	0.6528	.006620	80.08	.53012	310.01988	42.523	.0000632	.0026874	115360.52	
	10.56	312.15	0.6494	.006551	80.24	.52565	311.62435	42.612	.0000627	.0026678	116809.48	4.643.40
24.496 ……	10.56	312.15	0.6539	.006643	80.24	.53303	311.61697	42.612	.0000634	.0027016	115348.07	
	10.60	313.75	0.6505	.006574	80,40	.52856	313.22144	42.701	.0000629	.0026820	116786.50	4.642.69
24.663 ……	10.60	313.75	0.6550	.006870	80.40	.55234	313.19763	42.701	.0000636	.0027157	115328.51	
	10.64	315.35	0.6516	.006801	80.56	.54787	314.80213	42.790	.0000631	.0026961	116762.03	4.641.81
24.830 ……	10.64	315.35	0.6561	.006688	80.56	.53878	314.81122	42.790	.0000637	.0027257	115497.38	
	10.68	316.95	0.6527	.006619	80.72	.53431	316.41569	42.880	.0000632	.0027061	116926.82	4.648.48
24.997 ……	10.68	316.98	0.6571	.006708	80.70	.54433	316.43867	42.881	.0000639	.0027400	115488.56	
	10.72	218.50	0.6537	.006639	80.86	.53686	317.96314	42.971	.0000634	.0027204	116881.02	4.647.39
25.164 ……	10.72	318.59	0.6582	.006730	80.88	.54432	318.04568	42.971	.0000641	.0027544	115468.22	
	10.76	320.19	0.6548	.006661	81.04	.53985	319.65015	43.061	.0000636	.0027348	116882.45	4.647.01
25.331 ……	10.76	320.22	0.6589	.006747	81.04	.54661	319.67339	43.061	.0000642	.0027645	115635.15	
	10.80	321.84	0.6556	.006676	81.20	.54209	321.29791	43.152	.0000637	.0027487	116890.81	4 650.51
25.450 ……	10.80	321.84	0.6589	.006745	81.20	.54709	321.29231	43.152	.0000644	.0027854	116758.56	
	10.828	322.97	0.6566	.006698	81.31	.54461	322.43529	43.210	.0000640	.0027650	116596.25	[illegible]

Inclination of surface = 2.828.

It will be observed, that the aggregate fall of the surface required in the first, is shown to be something greater than that in the second table. This is to be attributed to the greater friction, arising from a larger surface of prism in contact with the water.

For reasons before alluded to, it is not believed that the prism of the canal should take either of the forms resulting from the calculations, as shown in the foregoing tables. An inclination of the bottom of the canal, as great as that of the surface of the water, during the time of sending forward the largest quantity, would, to preserve the minimum depth at Lockport, render it necessary that the supply be constant, and at all times equal to the maximum requirements of the canal. The current, as shown by the tables, would be nearly half a mile per hour, an amount too great for convenient navigation, consequently should be avoided as great a portion of the season as may be consistent with a due observance of economy in construction. As some inclination to the surface will be required during the time of sending forward the minimum quantity, a corresponding inclination may be given to the bottom; or, in other words, the top and bottom plane of the volume may be more nearly parallel during the minimum flow, retaining a depth during this time not greater than is necessary for navigation; provided economy in construction would permit the enlarged canal to take this form of prism.

Assuming, therefore, this minimum quantity at the amount required to supply the loss from filtration, &c., from Lockport to Rochester, relying for lockage water, and for all other demands east of the Seneca river, during the more wet portions of the season upon supplies from the Genesee river, we wish to ascertain the inclination that may be given to the bottom, retaining the same transverse section as in the second table.

For this purpose, the following table has been calculated, with the same formula as the first; commencing with 190 c. feet per minute upon the first, and increasing by the same amount upon every succeeding mile west, to Lockport.

No. 3.

Quantity.	Depth.	Bottom width.	Surface width.	Area.	Perimeter.	R, or $\frac{\text{area}}{\text{perimeter}}$.	$\frac{av+bv^2}{R}$ + distance = descent.	Distance.	Velocity.	$av+bv^2$.
190	8.00	38.00	70.00	432.00	73.78	5.585	.00019	5.280	.0073	.00000022
380							.00039		.0146	.00000044
570							.00059		.0220	.00000066
760							.00079		.0293	.00000088
950							.00098		.0366	.00000109
1.140							.00117		.0439	.00000131
1.330							.00137		.0512	.00000153
1.520							.00165		.0585	.00000184
1.710							.00191		.0658	.00000213
1.900							.00218		.0731	.00000242
2.090							.00243		.0804	.00000271
2.280							.00288		.0877	.00000300
2.470							.00297		.0950	.00000330
2.660							.00323		.1023	.00000359
2.850							.00360		.1096	.00000400
3.040							.00394		.1169	.00000438
3.230							.00428		.1243	.00000476
3.420							.00461		.1312	.00000512
3.610	8.10	38.00	70.00	432.00	73.78	5.585	.00498	5.280	.1392	.00000553
3.800							.00528		.1465	.00000591
3.990							.00564		.1539	.00000630
4.180							.00612		.1612	.00000681
4.370							.00654		.1685	.00000728
4.560							.00696		.1759	.00000775
4.750							.00739		.1832	.00000822
4.940							.00781		.1905	.00000869
5.130							.00823		.1978	.00000915
5.320							.00865		.2052	[illegible]

5.510							.00918		.2125	.00001022
5.700							.00966		.2199	.00001077
5.890							.01019		.2272	.00001131
6.080							.01066		.2345	.00001185
6.270							.01114		.2418	.00001239
6.466							.01161		.2491	.00001293
6.650							.01219		.2565	.00001355
6.840							.01277		.2638	.00001418
7.030							.01335		.2712	.00001482
7.220							.01388		.2785	.00001545
7.410							.01446		.2858	.00001607
7.600							.01504		.2931	.00001670
7.790							.01562		.3005	.00001734
7.980							.01626		.3078	.00001804
8.170							.01689		.3151	.00001874
8.360							.01752		.3225	.00001946
8.550							.01816		.3298	.00002016
8.740							.01879		.3371	.00002086
8.930	8.00	38.00	70.00	432.00	73.78	5.855	.01943	5.280	.3445	.00002157
9.120							.02006		.3518	.00002227
9.310							.02080		.3591	.00002308
9.500							.02148		.3664	.00002387
9.690							.02222		.3738	.00002467
9.880							.02291		.3811	.00002545
10.070							.02365		.3884	.00002624
10.260							.02434		.3958	.00002704
10.450							.02508		.4031	.00002783
10.640							.02587		.4104	.00002874
10.830							.02666		.4177	.00002962
11.020							.02750		.4251	.00003051
11.210							.02824		.4324	.00003138
11.400							.02904		.4397	.00003226
11.590							.02988		.4471	.00003315
11.780							.03067		.4544	.00003402
11.970							.03157		.4618	.00003503
12.160							.03241		.4691	.00003598
12.350							.03326		.4764	.00003693
							.84918			

From this table it appears that an aggregate fall of $\frac{85}{100}$ of a foot will be required to send forward the quantity assumed as above stated, giving to the surface at Lockport an elevation of $8\frac{85}{100}$ feet above the level of the bottom at the lower end, or point of starting. Deducting from this the requisite depth for navigation, (or 7 feet,) and reducing the depth of water represented to be necessary at the upper end, in table No. 2, by the remainder, 1.85, and adding its equivalent area at the bottom or that due to its depth to the side of the volume represented in said table No. 2, would give the sectional area as before, 645.94 feet, leaving a depth of 8.98 feet, and would increase the bottom width to 53.99 feet, and the surface width to 89.91 feet. This, it will be perceived, will admit of a variation in the elevation of the surface of $1\frac{98}{100}$ feet, and during the minimum flow the volume would have a depth at the upper end of 7 feet, and the surface an inclination of $\frac{85}{100}$ feet, and the bottom $1\frac{85}{100}$ feet in a distance of 65 miles; and during the maximum flow, or time of sending forward the largest quantity required, the surface would have an inclination of $2\frac{83}{100}$ feet, and the bottom the same as above, 1 85-100 feet.

By this change of the prism, the perimeter, and consequently the friction, will be a little increased, and an inclination a trifle greater will be required to produce the same velocity as is stated in the second table. In the case of minimum flow, however, a depth of 7 feet in the prism thus modified, furnishes a sectional area a trifle larger than that used in constructing table No. 3; consequently the flow will be somewhat greater. This, however, being so small as to produce no material or sensible effect upon the supply, no special provision on account of it is thought to be necessary.

With reference to a more full understanding of the form and dimensions that may be given to the prism of this section of the canal, another case is presented in the following table, (No 4.) which is calculated from the same formula as the first, for the purpose of showing the dimensions and inclination necessary to convey the same quantity, as in the first and second, with a velocity of half a mile per hour, from Lockport so far east as an increase to the regular dimensions of the prism is required, to convey the quantity with this velocity.

No. 4.

Distance in miles.	Depth in feet.	Quantity per minute in cubic feet.	Surface width in feet.	Bottom width in feet.	Transverse section. Area in feet.	Perimeter.	Mean radius.	$\frac{av+bv^2}{R} = I.$	Velocity per second in feet.	$I \times$ distance = descent.
1	8.00	25.450	88.3011	56.3011	578.4090	92.0723	6.2821	.00001236	0.733	.0652608
2	....	25.260	87.7613	55.7613	574.0909	91.5325	6.2719	.00001238	....	.0653664
3	....	25.070	87.2216	55.2216	569.7727	90.9928	6.2617	.00001240	....	.0654720
4	....	24.880	86.6818	54.6818	565.4545	90.4530	6.2513	.00001242	....	.0655776
5	....	24.690	86.1420	54.1420	561.1363	89.9132	6.2409	.00001245	....	.0657360
6	....	24.500	85.6022	53.6022	556.8131	89.3734	6.2302	.00001247	....	.0658416
7	....	24.310	84.9375	52.9375	551.4999	88.7087	6.2169	.00001249	....	.0659472
8	....	24.120	84.3977	52.3977	547.1817	88.1689	6.2060	.00001251	....	.0660528
9	....	23.930	83.9829	51.9829	543.8636	87.7541	6.1975	.00001253	....	.0661584
10	....	23.740	83.4431	51.4431	539.5454	87.2143	6.1864	.00001255	....	.0662640
11	....	23.550	82.9034	50.9034	535.2272	86.6746	6.1751	.00001258	....	.0662640
12	....	23.360	82.2613	50.2613	530.0909	86.0325	6.1615	.00001261	....	.0665808
13	....	23.170	81.8238	49.8238	526.5909	85.5950	6.1521	.00001263	....	.0666864
14	....	22.980	81.2841	49.2841	522.2727	85.0553	6.1403	.00001265	....	.0667920
15	....	22.790	80.7443	48.7443	517.9545	84.5155	6.1285	.00001267	....	.0668976
16	....	22.600	80.2045	48.2045	513.6363	83.9757	6.1164	.00001269	....	.0670032
17	....	22.410	79.6647	47.6647	509.3181	83.4359	6.1042	.00001272	....	.0671616
18	....	22.220	79.1250	47.1250	505.0000	82.8962	6.0919	.00001275	....	.0673200
19	....	22.030	78.5852	46.5852	500.6818	82.3564	6.0794	.00001278	....	.0674784
20	....	21.840	78.0454	46.0454	496.3636	81.8166	6.0667	.00001280	....	.0675840
21	....	21.650	77.5056	45.5056	492.0454	81.2768	6.0538	.00001283	....	.0677424
22	....	21.460	76.9659	44.9659	487.7272	80.7371	6.0409	.00001286	....	.0689008
23	....	21.270	76.4261	44.4261	483.4090	80.1973	6.0277	.00001289	....	.0680592
24	....	21.080	75.8863	43.8863	479.0909	79.6575	6.0143	.00001292	....	.0682176
25	....	20.890	75.3466	43.3466	474.7727	79.1178	6.0008	.00001295	....	.0683760
26	....	20.700	74.8068	42.8068	470.4545	78.5780	5.9871	.00001297	....	.0684816
27	....	20.510	74.2670	42.2670	466.13[illegible]	78.0382	5.9731	.00001300	....	.0686400
28	....	20.320	73.6477	41.6477	461.1818	77.4189	5.9569	.00001304	....	.0688512

No. 4.—Continued.

Distance in miles.	Depth in feet.	Quantity per minute in cubic feet.	Surface width in feet.	Bottom width in feet.	Transverse section. Area in feet.	Perimeter.	Mean radius.	$\frac{av+bv^2}{R} = I.$	Velocity per second in feet.	$I \times$ distance = descent.
29	....	20.130	73.1875	41.1875	457.5000	76.9587	5.9447	.00001306	....	.0689568
30	....	19.940	72.6477	40.6477	453.1818	76.4189	5.9302	.00001308	....	.0690624
31	....	19.750	72.1079	40.1079	448.8638	75.8791	5.9155	.00001311	....	.0692208
32	....	19.560	71.5681	39.5681	444.5454	75.3393	5.9005	.00001316	....	.0694848
33	....	19.370	71.0284	39.0284	440.2272	74.7996	5.8854	.00001320	....	.0696960
34	....	19.180	70.4886	38.4886	435.9090	74.2598	5.8705	.00001323	....	.0698544
									$\frac{2}{\frac{\text{area}}{60}}$ = velocity	
35	....	18.990	70.00	38.00	432.00	73.7712	5.8559	.00001325	.7326	.0699600
36	....	18.800	....	....	....	....	....	.00001302	.7253	.0687456
37	....	18.610	....	....	....	....	....	.00001279	.7179	.0675312
38	....	18.420	....	....	....	....	....	.00001257	.7106	.0663686
39	....	18.230	....	....	....	....	....	.00001233	.7033	.0651024
40	....	18.040	....	....	....	....	....	.00001198	.6960	.0632524
41	....	17.850	....	....	....	....	....	.00001178	.6887	.0621984
42	....	17.660	....	....	....	....	....	.00001157	.6813	.0610896
43	....	17.470	....	....	....	....	....	.00001137	.6739	.0600336
44	....	17.280	....	....	....	....	....	.00001116	.6665	.0589248
45	....	17.090	....	....	....	....	....	.00001096	.6591	.0578688
46	....	16.900	....	....	....	....	....	.00001077	.6520	.0568656
47	....	16.710	....	....	....	....	....	.00001057	.6446	.0558096
48	....	16.520	....	....	....	....	....	.00001037	.6372	.0547536
49	....	16.330	....	....	....	....	....	.00001016	.6298	.0536448

50			16.140						.00000996	.6226	.0525888
51			15.950						.00000970	.6153	.0512160
52			15.760						.00000956	.6080	.0504768
53			15.570						.00000936	.6007	.0474208
54			15.380						.00000916	.5933	.0483648
55			15.190						.00000896	.5859	.0473088
56			15.000						.00000876	.5786	.0462588
57			14.810						.00000857	.5713	.0452496
58			14.620						.00000838	.5640	.0442464
59			14.430						.00000818	.5567	.0431904
60			14.240						.00000800	.5494	.0422400
61			14.050						.00000783	.5420	.0413424
62			13.860						.00000763	.5347	.0402864
63			13.670						.00000745	.5274	.0393360
64			13.480						.00000730	.5200	.0385440
65			13.290						.00000712	.5127	.0375938

Fall in last 31 miles	1.6398136
Fall in first 34 miles	2.2899788
Total fall in 65 miles	3.9297924

From this table, it appears that the quantity diminishing b 190 cubic feet per mile, becomes so much reduced, that a pris of 8 feet in depth, with 38 feet bottom width, would convey with the velocity assumed, at the 35th mile from Lockport; an as the quantity continues to diminish, the inclination and velocit also diminish upon each succeeding mile, to the first lock east of Rochester.

Should a maximum velocity, as high as that assumed in the above table, be adopted, and the supplies for the canal east of Rochester be drawn from the Genesee river, at such times as a surplus beyond the quantity required for all other purposes may be passing in that stream; then, changing the form of the prism represented in the above table, (retaining the same sectional area,) by increasing the depth to 9.98 feet, and reducing the bottom width to 38, and surface width to 77.92 ft., would give a form similar to that obtained from table No. 2, after reducing the depth and increasing the width stated in that table, as before specified.

This change in the prism of table No. 4, gives a bottom inclination of 1.95 feet, and as the transverse section due to a depth of 7 feet is less than that used in constructing table No. 3, a small increase to this depth of water, and also the velocity stated in said table, will be necessary to convey the minimum quantity.

RECAPITULATION

Of the results produced by a modification of tables No. 2 *and* 4, *as above suggested, constituting Plans No.* 1 *and* 2.

	MAXIMUM FLOW.							MINIMUM FLOW.						
	Width at bottom.	Width at surface.	Depth in feet.	Descent in bottom in whole distance or in 65 miles.	Descent in surface in 65 miles.	Sectional area.	Velocity per hour in feet.	Width at bottom.	Width at surface.	Depth in feet.	Descent in bottom in 65 m'ls.	Descent in surface in 65 miles.	Sectional area.	Velocity per hour in feet.
At upper or Lockport end:														
Plan No. 1	53.99	89.91	8.98	1.85	2.83	645.94	2364.	53.99	81.99	7.00	1.85	0.85	475.93	1715
Plan No. 2	38.00	77.92	9.98	1.95	3.93	578.41	2640.	38.	....	....	1.95	....	....	....
At lower end, or at the first lock east of Rochester:														
Plan No. 1	38.	70.	8.	....	....	432.	1846.	38.	70.	8.	....	....	432.	......
Plan No. 2	38.	70.	8.	....	....	432.	1846.	38.	....	....	....	....	....	......

For the purpose of testing, in some degree, the accuracy of t results deduced from the application of the foregoing formula i a single case, a portion of the artificial outlet of the Onondag lake, 12 chains, or 792 feet in length was taken. This outlet ha a length of about 40 chains, and extends in a direct line from th Onondaga lake to the Seneca river. It has a fall quite uniform throughout, of about 5 inches. The section selected was abou equi-distant between the lake and river, and by instrumenta observation, was found to have a descent of $\frac{12}{100}$ feet; it was slightly variable, and transversely the least erea measured was 120.38 feet, which is something less than a similar section of th present Erie canal.

The formula of M. De Prony, with Eytelwein's coëfficients, gave as the mean velocity due to this descent, $1\frac{82}{100}$ feet per second, and that of Du Buat $1\frac{79}{100}$ feet. The velocity at the surface, as observed was $1\frac{45}{100}$ feet, which reduced to a mean, $1\frac{13}{100}$; showing a difference of 0.69, as compared with the former, and 0.66 with the latter; or about 60 per cent. greater than they should to correspond with the results as observed. There appears to be a fair agreement in the two formulas with each other, but a considerable difference between them both and the result of the observation. This may be accounted for in part, by the variableness of the section, and irregular or rough surface of the bottom and sides, which appeared to be somewhat greater than is usually found upon the surface of the sides and bottom of a canal.

It is further accounted for by the velocity not having attained a maximum, or the volume was still under the influence of the accelerating force of gravity, as was shown by the velocity being greatest at the lower end of the section taken.

It is believed that the formula will produce results corresponding very nearly with the facts, when applied to cases of prisms of larger dimensions and more moderate velocities. This opinion is derived from observation, and from the circumstance that, in the formula, no allowance is made for obstructions arising from counter currents, produced by sensible variations in the surface of the channel, which, in cases of high velocities, must be very considerable. In a case of great inclination it is supposed that it would be difficult to make an experiment in which there would be no deviation from the parallel motions of the filaments, or from an unbroken movement of the particles by continuous lines, supposed to take place in a case of uniform motion; though whatever of obstructions there may have been produced by the derangement of this order of the movement of the particles in contact with a smooth surface, in the numerous cases of experiments published, it is presumed are quite nearly represented by the coëfficients in the formula deduced from them. In cases of equal volumes and inclination, the velocity diminishes with the increase of the length of the perimeter; the perimeter should, therefore, in all cases, be increased in proportion to the increase of the surface in contact with the water; and, although the formula would, if the perimeter was taken at an amount precisely suited to circumstances, produce correct results when applied to rough channels; no assignable ratio of variation of this quantity can be given, that would be perfectly suited to various velocities, or admit of general application.

It, therefore, appears, that as the experiments from which the several formula above written were deduced, were made in channels having comparatively smooth surfaces, some allowance should be made in cases of their application to channels under different conditions, the amount of which should be governed by circumstances, and can only be approximated by judging from a series of careful observations.

Admitting, however, that the formula will vary as much from the truth when applied, as in the present instance, to a moderate velocity, as it did in the case of the experiment above recited; and the velocity prove less than it is shown will be produced by the inclinations given in plans No. 1 and 2; then, as the banks will have the usual elevation of three feet above the surface of the water, the inclination may be increased by raising the water at the upper end, say one foot, and as the lower end is calculated to have a depth of 8 feet, one foot may be drawn from the surface at this point, increasing thereby the inclination 2 feet, or about 70 per cent.; an amount greater by 10 per cent. than the discrepancy shown by the results of the application of the formula, and by observations in the experiment above alluded to. This increased declivity, notwithstanding the bottom at the lower end would have 4 feet less than the ordinary width, it is supposed would be practicable for short periods, without serious inconvenience to navigation. For reasons before mentioned, however, it is believed that so great an inclination will never be required; this view is strengthened by the opinion that the quantity assumed in the calculations to be necessary for filtration, will prove liberal, and that after the enlarged canal shall have been in u a few years, the losses from this cause will be diminished.

Table No. 1 is given for the purpose of comparing the resul of the formula used in this, with that produced by the one use in the construction of table No. 2. It also shows one form tha may be given to the prism. On account of facilities of flow, the prisms represented in plans No. 1 and 2 are considered favorable, and should they be equally favorable in point of economy in construction, a preference is given to No. 1, for the reason that the velocity is thought too great in either case, for the most economical navigation; but the additional expense attending the adoption of the first, will probably be so great as to justify the construction of this section of the canal upon the second or some similar plan. This could better be determined from an actual survey and estimate upon both plans, and from a knowledge of the disadvantages to the navigation, arising from velocitie greater or less than the most favorable.

With the tonnage equal in both directions, it is clear that the economy of transportation would not be improved by a current. It is, also, probable, that the construction of the canal upon such plan as with the present difference in the up and down freight, would most favor the navigation, and convey, at the same time, the required quantity of water, would considerably enhance the expense.

Although hitherto there has been in the aggregate a large and assignable difference in the amount of freight transported in opposite directions, there is too much probability of a variation in the ratio of difference that now exists, and too many modifying causes, to justify the application of any rule for determining the velocity that would be best suited to future circumstances.

The most favorable current with the present preponderance of tonnage, would probably not exceed one-third of a mile per hour; and a prism if enlarged to the ordinary dimensions would convey the quantity of water required, with a velocity of about ¾ of a mile per hour.

If the above premises are correct and it should be determined not to subject the navigation to a current as great as that last named, then it is obvious that some sacrifice of economy in construction to favor the navigation by an extra enlargement of the prism will be necessary; and if the supply to Seneca river is to be brought from Lake Erie, considerations of safety as well as convenience to navigation, indicate the propriety of this extra enlargement, and that the depth of the volume be at least proportionately increased.

It will be observed that the construction of the canal, agreeable to table No. 4, which provides for a depth of 8 feet, and a prism at the westerly end sufficiently large to convey the quantity with a velocity of half a mile to the hour, would require a constant supply, as before stated, nearly equal to the maximum requirements of the canal to be kept up at the upper end, or the surface in approaching a level would be liable to become so much reduced, that less than the required depth for navigation would be afforded. Any diminution, therefore, of the quantity introduced at this point, which might be the result of accident or otherwise, would tend to endanger the navigation.

The relative expense of constructing the canal upon plans Nos. 1 and 2 as compared with the ordinary enlargement, may, to some extent, be inferred from the following statements of dimensions:

	Feet.
The distance from one exterior of the bank to the other at bottom line of the canal in plan No. 1, is	169.83
The distance from one exterior of the bank to the other at bottom line of the canal in plan No. 2, is	161.84
The distance from one exterior of the bank to the other at bottom line of the ordinary enlargement	142.00

Or the horizontal space occupied by the canal at the bottom plane in plan No. 1, is about 19 per cent., and plan No. 2 is about 14 per cent. greater than in the case of ordinary enlargement.

The area of the transverse section, in case of equal cutting, or where the excavation is just sufficient to form the banks, is upon .... plan No. 1, about 316 feet.
do do do do do 330 "
do do do ordinary enlargement, 230 "

Or the section of excavation upon plan No. 1, is about 37 per cent., and plan No. 2 about 43 per cent. greater, than a similar section of the ordinary enlargement.

The above dimensions apply to the largest section, or that at the upper end, and as the extra enlargement diminishes as we proceed from Lockport towards Rochester, and in plan No. 2 runs out to 8 feet depth and 70 feet surface width at the 35th mile from Lockport, the cubical quantity necessary to be removed as compared with the ordinary enlargement, would average but about half of that above indicated, and would apply to a distan of 35 miles.

In view of all the circumstances known to have an influen upon this subject, it is believed that the adoption of plan No. would best insure the attainment of the object to be accomplished by an extra enlargement of the prism between Lockport and Rochester.

A reliable source of supply not heretofore considered, is the feeder leading from the Oak orchard and Tonawanda creeks. The minimum quantity to be supplied through this feeder is stated by Mr. Barrett at about 1,600 cubic feet per minute, which is to be received into the canal at Medina, 18 miles east of Lockport. It will be perceived that in the calculations no deduction from the quantity to be brought from Lake Erie is made on this account. Whatever of excess may be furnished at this point, beyond that stated in the foregoing calculations, it is considered should be held available for contingent demands that may be produced by the several causes before mentioned, by the increase of filtration consequent upon the extra enlargement of the prism, and by that which will be thrown off by the weigh lock at Rochester.

In the calculation of the quantity required for lockage water, it will be recollected that the number of lockages, or times of filling the lock, is taken at 200 every 24 hours. With this number of lockages and with a single lock, a much larger number of boats can be passed. Agreeable to an account kept by the lock-tender at the east lock at Macedon, from July 6th to 31st inclusive, with 884 locks full of water there were passed 1,837 boats and other floats. During the month of August, with 1,092 lockages, 1,749 boats, &c., were passed; and in September 1,091 lockages passed 1,769 boats; or for the whole time from July 6th to September 30th, the number of boats and other floats was about 62 per cent. greater than the number of times that the lock was filled.

With double locks, it is supposed that comparatively few locks full of water would be lost, and the number of boats will be nearly double the number of locks full of water.

The profiles and diagrams hereunto annexed, represent the inclination and form indicated for the prism by the several tables, also by plans Nos. 1 and 2.

Work partially resumed.

By acts passed May 12th 1847,

Upon the enlargement of the Erie, by an appropriation of			$717,620
do	Black River canal and feeder	do	100,000
do	Genesee Valley canal	do	128,000
do	Oneida river improvement	do	20,000
do	Oswego canal (enlargement of locks)	do	100,000

The above law authorized the Commissioners to charge the excess of the cost of rebuilding the old locks and structures on the enlarged plan to the Enlargement Fund on the Erie and Oswego canals. Under this law the second tier of the Lockport locks were commenced in August, 1847. The locks on the Oswego canal, by the above act, were not to be enlarged until one new lock had been constructed on the Erie at each point, from Syracuse to Buffalo.

The new Constitution was adopted in Convention at Albany, October 9, 1846, to take effect January 1st, 1847, and provided for the election of a State Engineer and Surveyor.

Charles B. Stewart was the first State Engineer elected under the Constitution, Nov. 2, 1847.

PROGRESS OF THE CANALS IN 1848.

The amounts appropriated for the resumption of the public works, by the Laws of 1847 and 1848		$2,695,000
Amount of work contracted under same		2,250,000
do	paid on same	1,070,773

Cuyuga and Seneca Canal.

Enlargement of the locks, authorized by act, May 25th, 1836, was commenced at Waterloo, as directed by act, chap. 348, Laws 1847. The estimated cost of composite lock directed to be built, was $12,673, the size to be the same as the enlarged Erie locks.

Th eoffice of Auditor of the Canal Department was created by act, chap. 162, Laws of 1848. His duties were to report to the Legislature the tolls of the canals, and prepare an annual exhibit of the trade and tonnage, substantially as the same was given in the report of 1847. The forms and tables under which that report was made, were designed by George W. Newell, Esq., and the reports of the Auditor on tolls, trade and tonnage, which have since followed, have contained a mass of statistics covering every point of interest connected with the subject of our State canals.

Crooked Lake Canal.

The rebuilding of all the locks (authorized by acts, chap. 338, Laws 1845, and chap. 249, Laws 1847) was completed during the year at a cost of $57,706 ; they were brought into use May 8, 1848.

Comparative Business of the Erie Canal.

Total value of imports (exclusive of specie) into the United States, for the year ending June 30, 1848,	$154,977,876
Total value of all articles transported on the canals in 1847	151,563,428
Total value of American lake commerce same period	141,310,551

Average cargoes on canal in 1847 were 67 tons, in 1848, 71½ tons burthen.

Average time, Troy to Buffalo, in 1847, 10½ days, in 1848, 9 days.

Canal Commissioners under the new Constitution.

It was determined by lot, as provided in sec. 3, article 5, of the Constitution, that Charles Cook should hold the office for one year, Nelson J. Beach for two, and Jacob Hinds for three years. Chas. Cook was appointed president, and N. J. Beach secretary.

The annual report was made under act, chapter 350, Laws 1847.

During the year Erieville reservoir was put under contract at an estimated cost of $23,313 ; the weigh lock at Syracuse at $19,878, and lock No. 50 at $46,618.

Oneida River Improvement.

This improvement has a length of about $19\frac{4}{80}$ miles, and extends from the Oneida lake to the Oswego canal at Three-river Point. The whole descent from the lake to the Oswego river and canal, is $9\frac{14}{100}$ feet, of which, previous to the work having been commenced, $1\frac{42}{100}$ feet occurred in a distance of 30 chains, immediately at the outlet of the lake : $3\frac{69}{100}$ feet in a distance of 50 chains, embracing the Caughanay rapids, about four miles from the lake ; 2.82–100 feet occurring in a distance of 43 chains at the Oak orchard rapids, situated about six miles below the rapids at Caughanay, and the remainder of the fall, amounting to 1.21–100 feet occurred between the points above mentioned, and between Oak orchard and theOswego canal, though mainly in the latter portion of the river on the first 1½ miles below the Oak orchard rapids.

The plan of the improvement contemplates a reduction of the surface of the Oneida lake about 1.25-100 feet by means of a thorough cut through the two bars at the outlet. The cut through the upper bar is to have a depth of about five feet, and an average width of 93 feet at the point of deepest cutting. 6.25-100 feet of the remainder of the fall is overcome by two locks of substantial stone masonry, 30½ by 120 feet dimensions of chamber, one of 3.25 feet lift is constructed at the lower end of a cut excavated along the south shore of the river through the rapids at Caughanay, and an embankment placed on the outer side of the cut, extends from the lock to deep water above the rapid: the other lock has a lift of three feet, and is located at the southerly end of the dam, constructed across the river at the foot of the rapids at Oak orchard, which elevates the water at the foot to the same level as that above the head of the rapid. The remainder of the fall, 1.64 feet, will, during the ordinary summer flow, be distributed along the surface the entire length of the river, in amounts varying on the several distances with the area of the transverse section of the stream.

The work of the improvement of this river, exclusive of that connected with the mechanical structures, was originally divided into four sections. The first extended from deep water in the lake to the head of the rapids at Caughanay, a distance of 4.4-80 miles. The second extended from the termination of the first to the head of the rapids at Oak orchard, a distance of 6.6-80 miles. The third embraced the last mentioned rapids, and had a length of 78.80 miles; and the fourth had a length of 7.76-80 miles, and included the remainder of the distance to Three-river Point.

Progress of the Canals in 1849.

Number and tonnage of boats.

The total number of boats on the canals in 1849, was 4,863, classified as follows: 20 boats of from 100 to 180 tons burthen, 2,000 of 75 to 95 tons, 2,157 of 50 to 70, 150 of 30 to 45 tons burthen, and the remainder from 10 to 30 tons. Average for 3,700 boats, 67⅜ tons.

Enlargement and supply of water.

Henry Tracy, Esq., was directed by the Canal Board to make the necessary examinations and gauges, first, as to the size of the prism necessary to pass a sufficient supply of water through the mountain ridge for 200 lockages at Clyde; and, secondly, the size and best form of the prism east of Lockport for the same number of lockages. From the results of Mr. Tracy's examinations, the Commissioners fixed the size of the prism, between Sulphur spring and Tonawanda creek, at a width of 100 feet at surface, and a depth of eight feet. (For Mr. Tracy's report, see progress canals for 1850.)

Black River Canal.

Thirty-five miles were completed and water let in November, 1849, and the feeder finished June, 1848. The feeder was four feet in depth, and passed 16,000 cubic feet of water per minute.

Dimensions of Enlargement changed.

The plan of the prism and lock chambers were changed February 17th, 1849, by Commissioners Cook, Beach and Hind; the prism by constructing the walls to the bottom of canal, and dispensing with the bench walls, adding, as they state, to the capacity of the canal for transportation nearly one-third; the "big bevels" in the locks were dispensed with, and form of masonry changed at the foot, thus adding seven tons to the capacity of a boat drawing $6\frac{1}{2}$ feet of water. The following diagrams illustrate the changes made.

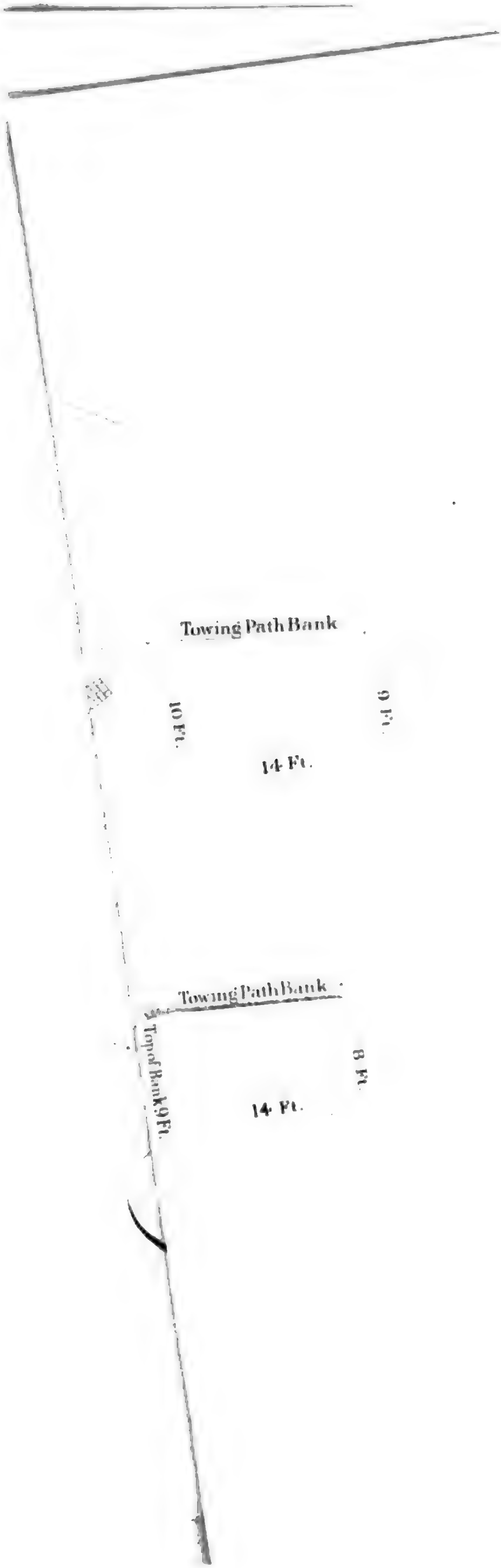
PROGRESS OF THE CANALS IN 1850.

First Annual Report of State Engineer and Surveyor.

Under act, chapter 377, Laws of 1850, in which are given the condition, cost of completion from new surveys and estimates of the enlargement, Black River and Genesee Valley canals at $10,508,141, as follows:

To complete the enlargement of the Erie canal..	$9,510,331 00
To complete the Black River canal...........	388,888 00
To complete the Genesee Valley canal	608,922 00
Total to complete canals.................	$10,508,141 00

At the date of the report there were $110\frac{14}{100}$ miles of enlarged canal completed and in use, $61\frac{14}{100}$ miles under contract, and $188\frac{34}{100}$ not commenced. H. C. Seymour, State Engineer and


Towing Path Bank
10 Ft.
9 Ft.
14 Ft.
Towing Path Bank
Top of Bank 9 Ft.
8 Ft.
14 Ft.

Surveyor, states in his report that "the original estimates of the cost of the enlargement have been found too low, but a perusal of its history shows that the Canal Commissioners overruled their decisions and adopted more expensive plans."

Mr. Seymour estimated that the business upon the canals during the season of 1850 was equal to six double track railroads, requiring 10,000 cars and 400 engines, at a cost of nine million dollars; and that when the enlargement should be completed the business would equal eight or ten double track railroads.

In relation to transportation, Mr. Seymour stated that the *cost of transportation* on the old canals, with single locks, and before improvements were made in the capacity of boats, was from $7.40 to $6.30 per ton, or $1\frac{9}{10}$ cents per ton per mile. The average rates for 1850, varied during the year from $4.44 to $6.94 per ton through, at an average of $5.69 or $1\frac{56}{100}$ cents per ton per mile, of which the State received nearly half for tolls; the estimated cost of transportation on the enlarged canal was $2.40 per ton, or $6\frac{7}{10}$ mills per ton per mile—3 mills for tolls and $3\frac{7}{10}$ mills charges. Mr. Olmsted, division engineer, estimated that the enlargement would save 36 per cent. in the cost of transportation.

Black River Canal.

Daniel C. Jenne, resident engineer, submitted a report on the improvement of Black river by longitudinal dams, jetties and piling; also on the means of furnishing water for the supply of Black River canal. He estimated the natural flow of Black river in low water $2\frac{11}{100}$ miles below High fall at 28,350 cubic feet per minute, which at $8\frac{1}{3}$ miles below left 28,812 cubic feet, and at 22 miles below left 76,680 cubic feet per minute. By raising the surface to five feet depth, and making an inclination of $1\frac{45}{100}$ feet, the increased flow would be 34,000 cubic feet per minute. Mr. Jenne stated that in extreme freshets the water rose twenty-two feet at the foot of High falls, making a descent in the surface to Carthage of twenty-three feet, and a flow of 210,945 cubic feet per minute. For the increased supply, see following report of Daniel C. Jenne, resident engineer:

REPORT.

The Black River canal diverges from the Erie canal at the village of Rome, and terminates at the village of Carthage, in

Jefferson county, a distance of about 77½ miles. Of this distance about 35 miles is to be an independent canal, and the balance of 42½ miles, slackwater navigation of the Black river. To this is added a navigable feeder, 10 miles in length, taken from the Black river, about 20 miles above the High falls, or the point where the canal enters the river.

The feeder is also designed as a feeder for the enlarged Erie canal, and has been extensively relied on in all the original estimates for a supply of water for said canal.

The capacity of the feeder is such as to pass 16,000 cubic feet per minute; and the surplus beyond what is necessary to supply the Black River canal, will pass to the Erie.

All the measurements which were taken in the early progress of this work, have made the volume of water in the Black river, at the point where it is diverted, from 14,000 to 16,000 cubic feet per minute, at its minimum flow.

The amount of water in the Black river at the place above referred to, at its lowest stage, during the summer of 1849, was only about 9,000 cubic feet per minute, making a deficiency of former estimates of from 5,000 to 7,000 cubic feet per minute.

It should be remarked here, however, that the water was lower than ever before known by those who have been familiar with the river for the last thirty years.

Nearly the whole volume of water was diverted for about three months in 1849 to feed the Erie canal, which left the river nearly dry from the head of the feeder to the High falls, and reducing it from 30 to 40 per cent. below the falls. Moose river enters the Black river a few rods above the falls, and Beaver river 32½ miles below.

There is extensive water power between the head of the feeder and the High falls, which was almost entirely useless during the time the water was diverted from the river in 1849, and the water power between the falls and Lake Ontario was materially injured, rendering a considerable portion of it (as I am informed) nearly unavailable.

Unless an amount of water be restored to the Black river equal to the quantity thus diverted for the supply of the Black River and Erie canals, heavy damages to water power will ensue, the amount of which will be almost incalculable.

The plan proposed by this Department to obtain an increased supply of water for the purposes above mentioned, is to construct reservoirs of the numerous lakes situated from 10 to 20 miles east of the head of the Black river feeder.

The Wood Hull has its source from these lakes, and is a prominent branch of the Black river, entering the same about three-quarters of a mile above the State dam.

By the directions of Hon. Nelson J. Beach, late Canal Commissioner, surveys of two of said lakes, viz.: the Wood Hull and Wolf, were made in September and October of 1849, which were found to contain an area of 1,163 acres, receiving a drainage of about 5,000 acres of land, These two lakes are near each other, and on about the same level, the Wolf lake emptying into the Wood Hull.

A temporary dam was constructed across the outlet of Wood Hull lake, which would raise the water about five feet. It was closed on the 9th of November last, and the reservoir was filled in 110 days; there was nothing more than an ordinary flow of water during the meantime, as the surface of the ground was for the most of the time covered with snow in the vicinity of these lakes, and was four feet deep when the water commenced running over the dam.

From all the facts in my possession, I am of the opinion, that if the dam had been raised to a height of 12 feet, and closed on the 20th of September, it would have filled by the 10th of June; and that the surface would have been increased about two-fifths, making 1,637 acres; and an average of 1,400 acres, by 12 feet in depth, would afford a reservoir of 731,808,000 cubic feet capacity.

This would furnish 9,000 cubic feet per minute for 56½ days, and 16,000 cubic feet per minute for 31¾ days.

I have assumed that 110 days would be about the time that an increased supply of water would be necessary to draw from the reservoir, and that the ordinary flow into it during the 110 days would be equal to the loss from evaporation and filtration.

If this be a correct basis, it would then require two reservoirs of dimensions like the above, to keep up the supply, or restore the 9,000 cubic feet per minute, and about 3½ such to make good the 16,000 cubic feet per minute.

There is a continous chain of lakes within a few miles of those above described, which are sources of the Wood Hull creek, and which, from the best information I can at present obtain, can be turned into reservoirs, with equal facilities, and about the sa expense.

These last mentioned lakes have not been examined by myse or my assistants, and I can only report, therefore, from genera information. I have, however, no doubt but that the above quantity of water can be obtained from these sources.

As to the necessity and practicability of constructing reservoirs on the head waters of the Moose and Beaver rivers, I would state that the sources of these rivers and the lake from which they flow, have not been examined by myself or my assistants, and, therefore, I can only base my conclusions upon general information.

At the head of the Moose river the natural advantages afforded for a reservoir are considered almost unsurpassed. The outlet of the lower lake is narrow, with prominent banks on each side, whereby the expense of daming will not be great, and an area of several square miles can be flowed with a low dam.

I am not in possession of sufficient data on which to base an estimate of the cost of constructing reservoirs at the head of these streams, but I should consider it safe to assume that they could be built at about the same expense as those at the Wood Hull and Wolf lakes.

While it must be apparent that the reservoirs on the Moose and Beaver rivers will not result in an equal amount of benefit that they would if the water was rendered available at the State dam, yet it should not be forgotten that they will vastly enhance the facilities of navigating the Black river, not only by retaining the surplus water in time of floods, affording greater security to the improvements on the river, but also increasing the depth of water in the river at a time when it would otherwise be low. I would add in conclusion, that these sources would furnish such an ample supply of water as to satisfactorily adjust all claims in future relative to damages to water power on the Black river, below High falls.

DANIEL C. JENNE,
Resident Engineer.

ENGINEER'S OFFICE, *Boonville, March* 30, 1850.

Erieville reservoir completed in March, 1850.

ENLARGEMENT OF LATERAL CANALS.

Majority report of the Canal Commissioners on Enlargement of Canals other than the Erie.

CANAL COMMISSIONERS' OFFICE,
ALBANY, *March* 5, 1850.

To the President of the Senate:

In compliance with the following resolution—

"IN SENATE, Feb. 12, 1850.

"*Resolved,* That the Canal Commissioners be requested to report to the Senate the plan or plans projected or adopted since 1st of January, 1848, for the enlargement of any of the State canals, other than the Erie canal; or of any channel, section, or portion of the same now or hereafter to be connected therewith; (whether by said plan or plans connected therewith,) whether by said plan or plans or connections with other navigable waters are to be discontinued, and to what extent; the location, cost or estimated cost of each portion now under contract; the amount done and remaining to be done; the law by which authorized, and the fund out of which the cost of each is payable; also a description of the plan and estimates of the cost of rebuilding the several locks, except on the Erie canal, now under contract, of the original and of the enlarged size; the changes, if any, in their location; the cost of bringing them into use, resulting from such changes, the authority for the same, and the fund from which the cost is payable.

"By order,
(Signed) W. H. BOGART, *Clerk.*"

The Canal Commissioners submit the following report:

That the Oswego canal extends from Syracuse to Oswego, a distance of $38\frac{26}{100}$ miles, $19\frac{7}{10}$ miles of which is made by slack water in the Oswego and Seneca rivers, and $18\frac{56}{100}$ miles is independent canal. There are located upon it, 18 lift locks, 6 guard locks, 8 dams, 1 aqueduct, 2 waste weirs, 5 culverts, 4 double track, 16 single track, 1 farm, 2 towing paths, and 6 change bridges.

This navigation, made up alternately of canal and river, is, in many places, very difficult and expensive to maintain.

Act, chap. 214, Laws of 1849, is in the following words

"The sum of one hundred thousand dollars appropriated to the Oswego canal, by chap. 262, Laws of 1847, together with the interest accumulated thereon, is hereby re-appropriated, for the purpose of rebuilding the locks on said canal, as fast as the condition of said locks shall render it necessary to be done.

"It shall be the duty of the Canal Commissioners, in rebuilding the locks on said canal, to construct them of the size of the enlarged locks on the Erie canal; and when, in their opinion, the public interest will be promoted thereby, the said Commissioners are hereby authorized to change the location of any of the said locks, and to diminish their number, and to do the necessary section work to bring them into use.

"It shall be the duty of said Canal Commissioners to cause accurate estimates to be made of the cost of rebuilding said locks of the present dimensions, and also of constructing the enlarged locks, and whatever the expense of such enlarged locks shall exceed the estimated cost of locks of the present dimensions, shall be paid out of the money hereby re-appropriated; and the residue of such cost, with the cost of such other work as may be constructed under this act, shall be charged to ordinary repairs."

Owing to the rapidly failing condition of the combined locks Nos. 9 and 10, at Fulton, and lock No. 15 at the "high-dam," it was found necessary to prepare the work for letting at these points as early in the season of 1849 as the necessary surveys and estimates could be made.

For this purpose, and in view of so arranging the levels as to dispense with some of the structures (should the plan prove practicable), the portion between Oswego falls and Oswego, a distance of twelve miles, was surveyed, and comparative estimates of the cost submitted:

1st. On the plan of continuing the present connection of the canal with the river.

2d. On the plan of separating it from the river, and dispensing with some of the structures.

The work now under contract on the Oswego canal consists of locks Nos. 8, 9, and 10; section No. 27, half a mile in length; two road bridges at Fulton; locks Nos. 15, 16, 17, and 18; sections Nos. 36½, 37, 37½, and 38, each half a mile in length; one aqueduct, and one road bridge at Oswego.

The river portion of the canal, now made by dam No. 4, at Fulton, is half a mile in length, and embraces the main part of the section work now under contract at that point. At the point where the old canal leaves the pond, and in immediate contact with it, a mill-race has been constructed, on which a large milling interest is growing up. This, together with the machinery at each end of the dam, creates a large demand for water. Consequently, much difficulty has been experienced at this point from the want of water to supply the canal.

The new line at Oswego passes over the river portion made by dam No. 8, a mile and a half, then across the Oswego Company's mill-race, then along the same half a mile to the termination at Oswego. For many years past serious difficulties have been experienced on this portion of the canal, both from the want of water, which has been drawn for the use of machinery on the race, and from the danger of navigating it in consequence of the current. A large amount of machinery is also in motion on the west side of the river, and drawing water from the same source.

Much has been said in former reports of the Canal Commissioners in relation to it, and much has been done; still the navigation has at all times been difficult. The demand for water at this point, it is thought, will more than keep pace with any improvement, short of an entire separation of the canal from the race.

The result, therefore, has been the adoption of a plan which, when fully completed, will dispense with one dam and two guard locks at Fulton, one dam, one guard lock, and two change bridges at Oswego, making an entire separation of the canal from the river at Fulton by constructing an independent canal through the pond, and at Oswego by an independent canal from the "high dam," crossing the Oswego company's mill-race and canal by an aqueduct.

The estimates of the engineer are for an enlarged canal of 52 feet width at bottom, and 7 feet water. The line follows a side hill the greater part of the distance from the high dam to the termination at Oswego. It adds but little to the cost of construction, whether the line is a few feet nearer or farther from the hill. It is intended to complete that portion from the terminating lock to the aqueduct in the city of Oswego, of the enlarged size, a distance of about half a mile. This being done, the citizens can make their erections along the same without the fear of being disturbed by the State in completing these unfinished portions of the canal through cities and villages. This is believed to be for the mutual interest of the State and the land owners adjoining the canal.

From the aqueduct to the high dam, a distance of about o and a half miles, the embankment will be raised to sufficie height to give four feet of water for navigation, which wi reduce considerably the estimated cost of this work. Thes remarks will equally apply to the work through the village o Fulton.

The absence of the engineer prevents us from stating the changes contemplated by his surveys, in the location of the lock between Oswego and Fulton, but the Commissioners understand that their present location will be substantially maintained.

There are but three points upon this canal where importan and desirable alterations are required; these are at Oswego, at Fulton and Salina; these alterations, the Commissioners have no hesitation in saying, the public interest requires. To rebuild the locks at those points at their present locations, might well be considered a waste of money.

These improvements, when completed, will separate the present connection with the river at Fulton and Oswego. Locks will be required to continue this connection, but as the Commissioners have no power to construct them, none have been provided for.

The following statement shows the cost of rebuilding the locks now under contract on the Oswego canal, of the original and of the enlarged size, at engineer's estimated prices:

	Cost of locks of original size.	Cost of locks of enlarged size.
Guard lock No. 3	$14,506 00	
do 4	12,071 00	
do 6	14,003 00	
Lift lock No. 8	31,573 00	$41,331 00
do 9	16,018 00	28,892 00
do 10	16,018 00	25,834 00
do 15	24,082 00	29,728 00
do 16	20,718 00	29,180 00
do 17	18,357 00	30,251 00
do 18	18,357 00	36,745 00
	$185,703 00	$221,961 00

The following statement shows the cost of rebuilding the locks now under contract on the Oswego canal of the enlarged size, the amount done and remaining to be done.

	Cost of locks of enlarged size at contract prices.	Payments made on work done.	Work remaining to be done.
Lock No. 8	$34,480 00	$6,150 00	$32,330 00
do 9	27,296 00	10,615 00	16,681 00
do 10	24,100 00	11,060 00	13,040 00
do 15	24,101 00		24,101 00
do 16	22,440 00	1,230 00	21,210 00
do 17	24,071 00		24,071 00
do 18	30,728 00	500 00	30,228 00
	$187,216 00	$29,555 00	$157,661 00

Payments on the above work are made under act, chap. 214, Laws of 1849.

A statement showing the cost of the work under contract on the Oswego canal at contract prices. necessary to bring the locks into use, the amount done and remaining to be done.

	Cost at contract prices.	Payments made on work done.	Work remaining to be done.
Section No. 27	$36,408 00	$630 00	$35,778 00
do 36½	26,555 00		26,555 00
do 37	25,025 00		25,025 00
do 37½	19,555 00	365 00	19,190 00
do 38	49.447 00		49,447 00
Aqueduct at Oswego	27,600 00	350 00	27,250 00
2 road bridges at Fulton	3,567 00		3,567 00
1 do at Oswego	1,929 00		1,929 00
			$188,741 00
Moving buildings		523 00	523 00
	$190,086 00	$1,868 00	$188,218 00

Payments on the above work are made under act, chap. 214, Laws of 1849.

Cayuga and Seneca Canal.

This canal is 23 miles in length, extending from the Erie canal at Montezuma to the Cayuga lake at East Cayuga, and to the Seneca lake at Geneva. The most important structures upon it are 12 locks, 6 dams, 13 road, 1 farm, and 27 towing path bridges.

The navigation, commencing at Montezuma, is made up of an independent canal to East Cayuga, and the main line to Seneca lake is made up of alternate portions of independent canal an slack water navigation formed by dams in the Seneca river.

The locks on the line of this canal were constructed of wood and are much decayed; they require the greatest care to preserve them in a condition for use.

Act, chap. 453, Laws of 1836, provides as follows:

"§ 1. The Canal Commissioners shall, as soon as the locks on the Cayuga and Seneca canal require to be rebuilt, rebuild said locks in a substantial manner with stone, and of the same width as the enlarged locks on the Erie canal."

§ 2. Relates to the Glens Falls feeder.

Act, chap. 348, Laws of 1847, provides as follows:

"§ 1. Whenever in the opinion of the Canal Commissioners, it becomes necessary to substitute new locks for the old locks in the Cayuga and Seneca canal, the Commissioners shall cause minute estimates to be made of the cost of rebuilding the lock or locks on the plan prescribed by the act entitled 'An act for the construction of the locks in the Cayuga and Seneca canal, and the west branch feeder of the Champlain canal,' passed May 25, 1836, and also minute estimates of the cost of constructing said locks of composite, of the same dimensions of the enlarged locks on the Erie canal, which estimates shall be submitted to the Canal Board, and when approved by that Board, and if the expense of the composite locks of the enlarged size shall not exceed the expense of the stone locks as prescribed by the act of May 25, 1836, aforesaid, the Canal Commissioners shall proceed to construct the lock or locks on the enlarged plan, and the cost thereof shall be charged to the fund appropriated to ordinary repairs.

"§ 2. The said Commissioners may diminish the number of the said locks, or alter their location, if in their judgment the interest of the State will be promoted thereby; and the aggregate expense of reconstructing the necessary locks and putting said canal in navigable condition will not be increased thereby."

Under the provisions of the foregoing acts, the Commissioners believing the time had arrived when it was necessary to substitute new locks for the old locks, in July, 1848, directed Charles W. Wentz, a resident engineer in the employ of the State to make a survey and estimate of the cost of constructing the locks upon the plan prescribed by the act, chap. 453, Laws of 1836, and also an estimate for constructing the locks of composite upon the plan contemplated by act, chap. 348, Laws of 1847.

By the report and estimate of the engineer, the aggregate cost of constructing the locks upon the plan prescribed by the act of 1836, was estimated at $188,769.64, and upon the composite plan prescribed by the act of 1847, the aggregate cost was estimated at $139,416.07, showing a difference in the aggregate in favor of the composite plan of $49,353.57.

In accordance with the provision in the act of 1847, the estimates of the engineer were submitted to the Canal Board, and on the 25th day of July, 1848, the following action was taken thereon by that Board.

Tuesday, July 25th, 1848.

"Present, the Secretary of State, Comptroller, Treasurer, Attorney General, State Engineer and Surveyor, Commissioners Cook and Beach.

"The plans and estimates for substituting new locks for the old locks on the Cayuga and Seneca canal having been submitted to this Board by the Canal Commissioners as required by the act, chap. 348, Laws of 1847, from which it appears that the cost of constructing all of said locks as required by chap. 453, Laws of 1836, is $188,769.64, and the cost of constructing said locks of composite, with cut stone wings, hollow quoins and recesses of the dimensions of the enlarged locks on the Erie canal, is $139,416.07, therefore in conformity with the provisions of said act, chap. 348, Laws of 1847,

"*Resolved*, That this Board approves and recommends the construction of the composite lock of the same dimensions as the enlarged locks on the Erie canal."

Connections with the navigable waters to be discontinued.

This canal as now constructed is connected by a race at the foot of the upper lock in Seneca Falls, with the pond which supplies water to the mills of Dows and Cary, on the north side of the river, and Oatman and others on the south side; by this race, boats pass from the canal into the pond, and thus have access to the mills located upon it for loading and discharging freight. This connection, which is important to those mills, can only be sustained by constructing a lock of four feet lift, through which to pass boats from the canal to their race. If this plan should be adopted it would keep up the connection of the canal with the race and slip, and at the same time prevent drawing water from the canal for milling purposes; which, although an important consideration to the State, the Commissioners have no authority to construct a lock for such purpose.

Changes in the location of locks.

Lock No. 1, one and a half miles from Geneva, is to be dispensed with under the act, chapter 313, Laws of 1844.

The lock at Chamberlain's, between Waterloo and Seneca Falls is to be dispensed with by raising the dam at Seneca Falls, and raising the towing-path from the lock to Seneca Falls to correspond; for the estimated cost of this change, see estimates annexed.

The only additional change contemplated by the plan adopted occurs at the upper lock at Seneca Falls, which is moved up the canal about 150 feet, in order to lengthen and improve the level below. This change is necessary, and contemplated by both plans; no separate estimate of the cost consequent upon this change is made.

Act, chapter 213, Laws of 1849, provides as follows:

"§ 1. In rebuilding the locks on the Cayuga and Seneca canal the Canal Commissioners are hereby authorized, if they shall deem the interests of the State to require it, to separate this canal from Seneca river, and construct an independent channel for the same, from the head of lock No. 9, below Seneca Falls, to the Montezuma level, crossing the Seneca river by an aqueduct thereby dispensing with the rebuilding of three locks.

"§ 2. The expenses incurred under this act, shall be paid as directed by chapter 348, Laws of 1847."

By the authority conveyed in the foregoing law, the Commissioners have directed the necessary surveys and estimates to be made, in order to ascertain the feasibility of the proposed improvement.

The length of this improvement is about three and a half miles, and the estimated cost of the work, including the aqueduct over the Seneca river, is $128,877.37.

The estimates are for a canal of the ordinary size, except the estimate for the aqueduct, which is intended to conform to the dimensions of the enlarged canal.

By this improvement, three locks are dispensed with (No. 9, 10 and 11), and about three miles of difficult slack water navigation.

The payments are made as directed by the act, chapter 348, Laws of 1847.

Statement showing the cost of work completed, also the estimated cost at contract prices of work now constructing, the amount paid, and remaining to be paid to complete the work:

No. of lock.	Location.	Estimated cost at contract prices.	Amount paid.	Amount to be paid.
2 and 3.	Waterloo completed	$36,853 88	$36,853 88	
5, 6 and 7.	Seneca Falls, constructing	58,616 19	28,450 69	$30,165 50
		$95,470 07	$65,304 57	$30,165 50

Statement showing the estimated cost of rebuilding locks 8, 9, 10, 11 and 12, and raising the Seneca Falls dam and the towing-path, so as to dispense with the Chamberlain lock:

No. of lock.	Location.	Estimated cost.	Amount.
8.	First lock below Seneca Falls.....	$14,611 00	
9.	Second do do	11,683 00	
10.	River crossing..................	11,424 00	
11.	do	13,926 00	
12.	Cayuga Lake lock	14,659 00	
	Raising Seneca Falls dam, &c.	9,471 00	
		$75,774 00	
	Add for contingencies	7,500 00	
			$83,274 00

LOCKS ON CHAMPLAIN CANAL.

No. of lock.	Location.	Kind of lock.	Condition.	Length from quoin to quoin.	Width in chamber.
No. 1........	Old Junction.........	Lift lock...	Old...........	90	15
2........	do	do ...	Old............	90	15
3........	Mohawk river, s'th side	Guard lock.	Rebuilt.......	100	15
4........	do n'th side	do .	Old	90⅓	15
5........	1st above Waterford..	Lift lock...	Rebuilt in 1842	100	16 1-6
6........	2d do do ..	do ...	do 1849	100	15 10-12
7........	3d do do ..	do ...	½ do 1844	99	14 9-12
8........	Flynn, do ..	do ...	do 1840	99 7-12	15 10-12
9........	Hewitt, do ..	do ...	Rebuilding....	100	15 10-12
10........	Becker's, do ..	do ...	Rebuilt in 1847	102⅓	13 9-12
11........	Saratoga dam.........	Guard lock.	do 1834	101	15 1-6
12........	do	do .	Partly rebuilt.	101¼	13⅓
13........	Bassitt's.............	Lift lock...	Rebuilt in 1839	101	15⅔
14........	Fort Miller...........	do ...	do 1842	100	15¼
15........	Moses' kill...........	do ...	do 1840	101⅓	15¾
16........	Fort Edward..........	do ...	do 1837	100	15
17........	Fort Ann.............	do ...	do 1829	101⅓	13⅔
18........	do	do ...	do 1829	101¼	13¼
19........	do	do ...	do 1829	101⅔	13¼
20........	Parish lock	do ...	do 1837	100	15
21........	Wood creek	Guard lock.	do 1845	100	15
22........	Whitehall............	Lift lock...	do 1829	100	13⅔
23........	do	do ...	do 1829	100	13⅔
24........	do	do ...	do 1829	100	13¼
Wat'rford side cut........	Waterford............	....	....	....	....
No. 1........	do	Lift lock...	Partly rebuilt..	98	14
2........	do	do ...	do ..	98	13 9-12
3........	do	dc ...	do ..	98	13 9-12

N. B. The above measurements have been carefully made, and the dates of rebuilding the several locks ascertained as nearly as possible.

J. P. GOODSELL, *Engineer.*

Chemung Canal.

The work now in progress upon this canal, is by order of the Senate, in the hands of a select committee. It may therefore be considered improper to speak of it in this report.

All of which is respectfully submitted.

CHARLES COOK,
JACOB HINDS,
Canal Commissioners.

Minority report of the Canal Commissioners, in answer to resolution relative to projected plans of enlargement of canals, other than the Erie canal, on March 21, 1850.

To the President of the Senate:

In compliance with the following resolution,

"In Senate,
"*February* 12, 1850.

"*Resolved*, That the Canal Commissioners be requested to report to the Senate the plan or plans projected or adopted since the 1st of January, 1848, for the enlargement of any of the State canals, other than the Erie canal; or, of any channel, section, or portion of the same, now or hereafter to be connected therewith; whether by said plan or plans, connections with other navigable waters are to be discontinued, and to what extent; the location, length and cost, or estimated cost of each portion now under contract; the amount done and remaining to be done; the law by which authorized; and the fund out of which the cost of each is payable; also a description of the plan and estimates of the cost of rebuilding the several locks, except on the Erie canal, now under contract, of the original and of the enlarged size; the changes, if any, in their location, the cost of bringing them into use, resulting from such changes; the authority for the same, and the fund from which the cost is payable.

"By order.

(Signed) "W. H. BOGART, *Clerk.*"

The undersigned, one of the Canal Commissioners of this State, having had under consideration the resolution of the Senate above recited, and having seen the report of the majority of the Board of Canal Commissioners thereon, begs leave to dissent from said report, and to submit the following as the report of a minority of said Board of Canal Commissioners.

The undersigned has no means of ascertaining the amount, kind or quality of work finished, in progress, or under contract, on the Chemung, Cayuga and Seneca, and Oswego canals, nor the estimated cost thereof, and is therefore unable to say whether the statements in said majority report on those subjects are true, and present to the Senate a fair and faithful exhibit of the extent of the aggressions on the guarantees of the Constitution or not. If the estimated amounts fall as far short of the actual cost as the past history of engineering in this State would authorize us to suppose, then we may safely double the figures of the majority report as the probable amount of the expenditures which will be required to complete the works now in progress of construction on said lateral canals. I shall not trouble the Senate with any unnecessary speculations, with regard to the propriety of commencing these works under proper circumstances; nor with regard to the economy manifested in their progress thus far; nor should I have troubled the Senate at all with any report on the subject, did I not believe that a great principle is involved in the legislation of the past two or three years, and the acts of the Commissioners under it, tending to the establishment of a policy which I deem highly reprehensible, to call it by no harsher name, and against which I feel bound to enter my solemn protest.

It is this: Is there power in the Legislature, or the Canal Commissioners, to apply a dollar of the canal revenue to the enlargement of any work not specifically provided for in the Constitution, until the guarantees of the Constitution to the public creditors are fully met and satisfied? Another change of canal policy is also involved in the action of the Canal Commissioners, of serious moment, although it is of secondary consideration to the great question of constitutional power.

It has, until within a few years, been the settled policy of the State, as a matter of economy and interest, to avail itself of the natural advantages of river navigation, wherever such advantages existed and might be improved by the State, as in the case of the Tonawanda, the Seneca, the Oswego, the Chemung and the Hudson rivers. Experience has demonstrated that river navigation, in connection with the canals, is a cheap, economical, safe and useful navigation; and after the lapse of a quarter of a century it is too late to urge that it is so useless, expensive or difficult, as to authorize a deeply indebted State to overleap all constitutional restraints to remedy the evil. The policy now in vogue seems to be to cut loose from the streams heretofore employed as a part of the canals, to throw away the money expended in their improvement, and to dig new channels on the enlarged plan along their margin at a great expense, and, in my opinion without any justification whatever for the change. This change has been made at Havana, and, as I think, without the slightest necessity for it; along the Seneca river, where I have been unable to discover any improvement was needed, except the rebuilding of a few locks; and at Oswego, where a half a million of money will be squandered in what are called *improvements*, which, from the limited knowledge I have in the matter, are as uncalled for as would be a ship canal along Long Island Sound. Some of the locks on the Oswego canal undoubtedly required to be rebuilt; and I do not question the propriety of rebuilding them on the enlarged plan, at all events, until the $100,000 appropriated to said canal should be exhausted in providing for the increased expense of the enlarged locks, beyond the cost of those of the old plan. This money, judiciously expended, would, in my humble opinion, have met all the wants of that canal until the time when the completion of the works provided for in the Constitution would have left the canal revenues free, to be applied to the entire enlargement of the Oswego canal. I also enter my protest against this new, and in my judgment, wasteful and profligate policy.

The serious question, however, is that of constitutional power; and I must be pardoned for devoting a brief space of time to the examination of this question, in order that my position as an officer of the State having charge of canals, may be clearly understood. If I remained silent, my silence might well be construed into my approval of what I deem to be wholly indefensible.

The provisions of the Constitution are clear, direct, and imperative. A mind not distorted by interest or hostility to the government of the State, and the will of the people, can see distinctly the path of duty which it marks out; and seeing this, its commands ought, and should be obeyed. It is no answer, morally or legally, to say that the 7th article is no part of the Constitution. That ground has been taken in high places; and what was understood to be the mandate of an administration, may have materially influenced the conduct, if not judgment, of a partizan Legislature. But I can never subscribe to the doctrine that I am at liberty, either as a citizen, or an officer, to regard such portions of the fundamental law, as I may find an obstacle to my individual projects, as no part of the paramount law of the land, or to speculate on the probability of its adoption if it had stood alone, or a salvo to a foregone conclusion to disregard it.

The first section of the seventh article of the Constitution, declares that, "after paying the expenses of collection, superintendence and ordinary repairs, there shall be appropriated and set apart in each fiscal year, out of the revenues of the State canals, $1,300,000," etc., until the debt called the canal debt shall be wholly paid. The second section sets apart $350,000 out of the surplus revenues of the State canals for the payment of the General Fund debt. The third section is in these words: "After paying the said expenses of superintendence and repairs of the canals, and the sums appropriated by the first and second sections of this article, there shall be paid out of the surplus revenues of the canal to the treasury of the State, on or before the 30th day of September in each year, for the use and benefit of the General Fund, such sum, not exceeding $200,000, as may be required to defray the necessary expenses of the State, and the remainder of the revenues of the said canals shall, in each fiscal year, be applied in such manner as the Legislature shall direct, to the completion of the Erie canal enlargement and the Genesee Valley and Black River canals, until the said canals shall be completed."

It will be seen by an examination of these sections that the whole of the revenues of the State canals are from year to year specifically appropriated by the Constitution, and in this order of priority: 1st, to the expenses of collection, superintendence and ordinary repairs; 2d, $1,300,000 as a Sinking Fund to pay the debt known as the canal debt; 3d, $350,000 as a Sinking Fund to pay the General Fund debt; 4th, a sum not exceeding $200,000 to aid the General Fund in defraying the expenses of government; and 5th, all the remainder to the completion of the Erie enlargement, the Genesee Valley and Black River canals—"until the said canals shall be completed." This order of priority, and the true signification of the term "ordinary repairs" has become exceedingly interesting, if not important. Modern ingenuity, it is true, has discovered that ordinary repairs is a convertible term, and may, by a little legislative legerdemain, be made to signify the enlargement of the lateral canals, and embellishing them with costly and magnificent bays, basins, and aqueducts—the constructing of new canals where none have heretofore existed—the changing the routes of the old lateral canals, and in short the entire engulfing, in the lateral canals, the remainder, which the people, in adopting the Constitution, vainly supposed they had sacredly pledged to the completion of the works which had been authorized by law, begun, and abandoned for want of funds.

Let us examine this modern doctrine a little farther. If the term, "*ordinary repairs,*" can by possibility be tortured into an authority for enlarging a lock, or a rod of the *lateral canals*, what shall prevent a similar construction in favor of enlargement on the *Erie canal?* Enlargement means the same thing, as I understand it, on the Erie, Chemung, or the Oswego canals. It will be borne in mind that "*ordinary repairs*" has priority of all the constitutional appropriations of the canal revenues. If the term, "*ordinary repairs,*" is so elastic as to be stretched over every species of enlargement, what becomes of the several Sinking Funds? Why not finish the Erie enlargement, and the Genesee Valley and Black River canals, before applying a dollar to the payment of the public debts? All that is required to accomplish it is a poetical flourish at the end of the act authorizing it, thus, "and the expenses thereof shall be charged to *ordinary repairs.*"

Who cannot discover the utter fallacy of this abominable doctrine? Ordinary repairs has heretofore had a definite, well understood meaning, and was first as distinctive a term as *construction*, or Erie enlargement, until locality and private cupidity laid their unholy hands on the Constitution, and scattered its sacred guarantees to the four winds of heaven. The majority, it seems, rely on a statute passed in 1836, to justify the enlargement of the *locks* on the Cayuga and Seneca canal. Surely the majority must know that if that statute is inconsistent with the provisions of a Constitution adopted since its passage it is abrogated. It has become impossible to carry it into effect, and it has therefore ceased to be a valid or binding law, and it is so expressly declared in the 17th section of the first article of the Constitution of 1846. That act was *abrogated* by the Constitution, and cannot justify a diversion of the canal revenues to objects prohibited by that Constitution. The act authorizing the extension of the Chemung canal, and appropriating a portion of the canal revenues under the very convenient misnomer of "*ordinary repairs*" to that object, was, in my opinion, clearly unconstitutional, and was a dead letter the moment it had passed through *the forms* of legislation, and should not, therefore, have been carried into effect. Much has been said of the acts and doings of officers of the State under what is claimed as authority granted by this statute. But as it is probable that all these matters will come up for investigation before a committee appointed by one branch of the Legislature of this State, I do not feel myself at liberty to refer more particularly to the acts of individuals; for I would by no means make myself obnoxious to the charge of wantonly or untimely assailing, or seeking to prejudice the position of any man. I am free to admit, however, that with my present understanding of that great and paramount law of the State, (the Constitution,) I should have felt myself at liberty to disregard the law in question, and by so doing have brought the statute, or my acts under or in regard to it, to the decision of the proper legal tribunal.

The act of 1849, authorizing the enlargement of the locks on the Oswego canal, under one of the multiform aspects of "*ordinary repairs*," is equally unconstitutional. The law, too, waiving this objection, only authorizes a change of the *location* of the locks, and the necessary section work to bring them into use. Now it appears that an entirely independent line of canal has been projected, and the old works of the State entirely abandoned, so far as the slack water navigation is concerned. This, I insist, is not contemplated by the statute, although it is drawn with consummate skill and ingenuity. If this plan of separating the canal from the river is carried out, I do not hesitate to predict that $2,000,000 of the canal revenues will be buried in the new line, under the convenient head of "ordinary repairs!" In my judgment it is not advisable that this separation should take place.

If my views of the Constitution are correct, then these lateral works must stop where they are. It is no more competent for this Legislature to continue an unconstitutional work, than it was for the last Legislature to commence it. Not a dollar of canal revenues can be appropriated to this object without doing violence to the plainest and most sacred pledges of the Constitution; nor can they be resumed until "the Erie enlargement, the Genesee Valley and Black River canals are completed."

It is signally unfortunate that the expressed will of the people should not have been obeyed. Daily loud complaints are uttered because the capacity of the Erie canal is not adequate to the demands of a rapidly growing commerce. Portions of it are enlarged, while other portions are not, opposing serious obstacles to its usefulness. It is the aorta of the canal system, bearing the lifeblood of commerce from its most distant ramifications through its now impeded channels, and it can ill bear the gross robbery of the aliment upon which it had a constitutional right to depend for an increase of its capacity. It is idle to say that the Chemung, or Cayuga or Seneca canals were not fully adequate to all the demands of commerce upon them. Their enlargement was not needed, and it was unconstitutional to do so. The Oswego would have been content with enlarged locks, and the $100,000 would have secured this improvement. All beyond this, in my estimation, was wrong.

It remains to be seen whether farther provision for these works is to be made under the specious cover of "ordinary repairs." If such shall be the result, I shall have the proud satisfaction of knowing that my earnest protest is recorded against it.

Respectfully submitted.

FREDERICK FOLLETT.

Size of prism and supply of water—Western Division.

The following is the report of Henry Tracy, Esq., on this subject, and referred to in reports of Commissioners in 1849:

Report of the Canal Commissioners as to the supply of water between Tonawanda and Montezuma.

CANAL COMMISSIONERS' OFFICE,
January 28, 1850.

To the President of the Senate:

In compliance with the following resolution:

"IN SENATE, *January* 26, 1850.

"*Resolved*, That the Canal Commissioners report to the Senate what action has been had by them in relation to the supply of water for the Erie canal between Tonawanda and Montezuma.

"By order. WM. H. BOGART, *Clerk*."

The Canal Commissioners report:

That in June last, Henry Tracy, Esq., a civil engineer, was employed to examine and report upon the subject of a supply of water for the Erie canal from Buffalo to Montezuma, to be drawn from the Tonawanda creek and Lake Erie.

The only action had by the Commissioners, except the directions to Mr. Tracy, has been to determine upon the size of the prism of that portion of the canal between Lockport and the Tonawanda creek, upon which no work had been done previous to the suspension of the public works in 1842. To pass the requisite quantity of water for the supply of the canal, east as far as Montezuma, it has been determined to make that portion of it 100 feet wide upon the surface, by eight feet in depth, with banks sloping 1¼ feet horizontal, to one foot vertical rise.

Whenever it is necessary to fix upon the size of the prism east of Lockport, the examinations already made will enable the Commissioners to do so by a comparison of the report herewith submitted with others heretofore made upon the same subject.

Respectfully submitted.

CHARLES COOK,
FREDERICK FOLLETT,
JACOB HINDS,
Canal Commissioners.

Report.

To the Hon. the Canal Commissioners
of the State of New York.

Gentlemen: According to your instructions, I have made the necessary examinations of the route for the Erie canal enlargement between Tonawanda creek and the Montezuma level, for the purpose of ascertaining the proper size of the water way, and the inclination of surface required, so as to supply it exclusively from the water of Lake Erie and Tonawanda creek; the canal to be adapted to a trade of 200 lockages a day.

And I beg leave to submit the following.

HENRY TRACY, *Civil Engineer.*

Albany, *Dec. 27th*, 1849.

Report on the proper size, plan, and surface inclination for the Erie Canal enlargement, between the Tonawanda creek and Montezuma.

In order to ascertain the proper size and inclination for this part of the canal, it becomes necessary to determine,

1.

The quantity of water required for the canal.

2.

The maximum velocity for the current.

3.

The rule by which its inclination should be calculated.

4.

The effect of aquatic plants in retarding the current, &c.

1.

The quantity of water required for this part of the canal.

This is given at length in a report of the undersigned to the Canal Board, dated the 17th instant, to which he begs leave to refer. The amount of water required, is (in that report) given as follows, viz.:

	Cubic feet a minute.
*Leakage, waste and evaporation	24,000
†Lockage water	2,959
Swelling boats out of locks	740
Leakage of double locks	2,400
Total	30,099

Say 31,000 cubic feet a minute.

The quantity required to pass different points on the canal, will be as follows, viz.:

Pendleton	31,000
Lockport	29,600
Rochester	17,000
Last lock at Clyde	6,100

2.

The proper velocity at which the water should move.

The canal tonnage going east (down tonnage,) is about five times as great as that going west, (up tonnage,) hence a slight current in the canal favoring the descending trade, will do no injury, but rather be a benefit. This current, however, should not be so strong as to require more force to draw a boat west with a light, than east with a heavy load.

‡ The ordinary velocity at which canal boats are towed,

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* The distance is 120 miles; improvements have been proposed which will shorten the route, but probably will not materially affect the amount of water.

† This is for an average trade of 200 lockages a day, which will at times require the passage of 400 boats a day.

‡ Two horses are used for towing freight boats. The boats now in use weigh from 25 to 35 tons; a full load is from 65 to 85 tons. The boats for the enlarged canal will carry from 150 to 200 tons.

(exclusive of the current,) is about two miles an hour. With a mean current of from one-third to one-half a mile an hour, (varying according to the shape of the boat, &c.,) the force required for towing a loaded boat at this velocity, (exclusive of the current,) to the eastward, will be about the same as that required to draw the same boat with one-fifth of a load westward (against the current) at the same velocity.

This current will to some extent hinder the passage of loaded boats going west, yet against it they can be drawn at from 1⅓ to 1⅔ miles an hour.

Hence it has been deemed proper to fix the greatest velocity for the mean current at half a mile an hour. This gives a surface velocity of about ⅝ of a mile an hour. Any velocity greater than this will offer obstructions to the trade.

3.

The rule by which the inclination should be calculated.

Though much has been written on the theory of hydrodynamics, yet the formula of Prony is the best at present known for calculating the velocity of water in rivers and canals, when we have given their size and the inclination of their surface.

The formula is as follows, viz:

$$V=\frac{1}{2\,b}\left\{(4\;b\;I\;D+a^{2})^{\frac{1}{2}}-a\right\}$$

In which $V =$ the mean velocity in feet a second.

$I =$ the sine of the inclination of the surface.

[*] $D =$ the hydraulic mean depth in feet.

The constants *a* and *b* were determined by experiments made by Prony as follows, viz:

$$a = 0.0000444499$$
$$b = 0.0000942772$$

and later, by a more numerous set of experiments made by Eytelwein, as follows, viz:

$$a = 0.0000242651$$
$$b = 0.0001114155$$

The formula gives merely an approximation to the truth for open canals of small size quite correct, but for waterworks like those of New York and Boston, having smooth channels, it is necessary to use other values for *a* and *b*.

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[*] The hydraulic mean depth is the quotient of the area of the cross section of the water way, divided by that part of its perimeter below the surface of the water way.

The results calculated according to the different constants and *b*, of Eytelwein and Prony, vary as follows, using the sam values of *I D*, for each.

Value of *I D*, in feet.	Velocity in feet a second.		
	Eytelwein.	Prony.	Dif. per cent.
0.00000931	0.20	0.16	20
0.00001731	0.30	0.25	17
0.00002753	0.40	0.35	12
0.00003999	0.50	0.46	8
0.00005467	0.60	0.56	7
0.00007158	0.70	0-66	6
0.00009072	0.80	0.77	4
0.00011209	0.90	0.88	2
0.00013568	1.00	0.99	1
0.00016150	1.10	1.09	1

The velocity of half a mile an hour, or forty-four feet a minute, is equal to 73-100 of a foot a second.

By an inspection of the above table, it will be seen that at this velocity the constants of Prony give results differing about five per cent. from those of Eytelwein.

The safest plan will be to use the rule of Eytelwein to determine the low water mark, and that of Prony for the high water mark.

4.

The effect of aquatic plants in retarding the current.

On the Western Division of the canals, much obstruction is offered to the flow of water in the canal by various species of pond weed (potamogeton) and other aquatic plants. These plants, in the summer months, cover nearly the whole bottom and sides of the canal between Lockport and Brockport. They commence growing as soon as the water is warm (generally in the month of June), and some varieties will rise to the surface in ten or fifteen feet depth of water. They are propagated both by seeds and root. Originally, they seem to have been brought by the current from Tonawanda creek (but are found in most of the small lakes and streams of western New York), and gradually increasing; there is reason to expect that in a few years the whole division will be covered with them.

By an ingenious contrivance[*] of Commissioner Hinds, these grasses can be cut and removed; but their growth is so rapid during the months of July and August, that it is necessary to cut them every few days. At the approach of cold weather and frost the whole disappear. Even when well cut, the stubble of this grass offers considerable resistance to the motion of the water.

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[*] A sort of under-water scythe.

Size of water way, and plans for the canal.

Dividing the number of cubic feet of water a minute required to pass different points, by the velocity in feet a minute (44), we have the water way required, as follows, viz:

At Pendleton	705	square feet.
At Lockport	673	do
At Rochester*	386	do

Nine miles west of Rochester, the water way of the ordinary size (viz., 429 square feet) will be required to pass the water at the velocity of 44 feet a minute.

Hence there is a necessity of making a greater water way than ordinary for the canal between this point and the Tonawanda creek.

East of Rochester, the water way remaining the same size as ordinary, (viz., 429 square feet,) the velocity will generally decrease to the last lock.

Plans proposed for the increased size of water way.

In making the plans, it has been thought best to use the ordinary side slopes, of 1¼ horizontal to 1 vertical, in earth work for the canal prism, (to be protected with slope walls,) and of 2 horizontal to 1 vertical for outside slopes in excavation and embankment. In rock, the cuts to be vertical.

1. From Tonawanda creek to the head of the Lockport locks (about 7 miles in length.)

The mitre sill of the guard gates near Pendleton is about 8 feet below the surface of low water; hence it is best to make the canal but 8 feet deep between the guard gates and Tonawanda creek; with this depth will be required 100 feet in width of surface, and 80 feet bottom width. East of these guard gates two plans are submitted, viz: Nos. 1 and 2. See annexed profile.

By plan No. 1 the canal will be 80 feet wide on the surface, $53\frac{7}{10}$ feet wide on the bottom, and 10½ feet deep in the earth work, (about 2½ miles,) 62 feet wide and 12 feet deep in the roc (another 2½ miles.)

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*The Rochester aqueduct has a water way of but 304 square feet in the narrow part (when seven feet in depth). The velocity in the aqueduct will therefore be fifty-six feet a minute.

Plan No. 2 contemplates making the canal 100 feet wide a 7 feet deep. This plan will cost about $450,000 more than pla No. 1.

Plan No. 1 is believed to be far the best as well as the cheapest.

If constructed on this plan the flow of water at Lockport can be entirely controlled, even in time of the disturbance caused by rapid locking, grass, &c., without interfering with the navigation.

2. From the foot of the locks at Lockport to Rochester, (63 miles.)

As there is no lock on this distance, it has been thought best to make the towing path and berme banks so as to allow of raising the water from 2¾ to 3 feet higher at Lockport, during the obstructions caused by the grass, than will be required when these do not exist.

Four plans have been prepared for this part of the canal, (see annexed plans, profiles Nos. 1, 2, 3 and 4.)

Plan No. 1.

The canal to be of the ordinary width on bottom, with such depth and surface inclination as may be necessary to pass the water at a mean velocity of half a mile an hour.

Plan No. 2.

The canal to be of the ordinary depth, with such width of water way as may be necessary to pass the water at the same velocity.

Plan No. 3.

The canal to be eight feet deep for the first forty miles east of Lockport, and from thence gradually decreasing in depth to Rochester.

The water way on the western portion being made, in part, by increased width.

Plan No. 4.

The canal to have the bottom level between Lockport and Rochester, (the same level as the Rochester aqueduct,) and to have such depth at Lockport, as to give sufficient inclination to the surface to pass the required amount of water.

The principal dimensions of these plans are given in the following table, showing the size proposed for the Erie canal enlargement at Lockport, and the fall in the surface between Lockport and Rochester :

PLAN No.	IN TIME OF LOW WATER.				IN TIME OF HIGH WATER.		
	Depth.	Width of bottom.	Surface.	Fall in surface.	Depth.	Width of surface.	Fall in surface.
1	10.30	52.5	78.25	3.82	13.00	85.0	6.52
2	7.00	87.5	105.00	4.30	10.00	112.5	7.30
3	8.00	74.0	94.00	3.86	11.00	101.5	6.86
4	10.41	52.5	78.52	3.41	13.20	85.0	6.20

The size east of Rochester to be the same used on other parts of the canal, viz.: 70 feet surface, 52½ feet bottom width, and 7 feet in depth.*

The cost of the different plans will be about the same, if proper care be taken in selecting the routes. It is however thought that the greater width of canal, according to plans Nos. 2 and 3 will increase the cost of culverts and bridging, so as to make those plans the most expensive.

The cost of this part of the canal, will be from 25 to 35 per cent. more, on account of the increase in the size of its water way, than it would be if constructed of the same size as ordinary canal.

Constructed on plans 2 or 3, it would be necessary to pass at all times nearly the same amount of water that is generally required. For if this, by some accidental cause does not happen to be done, the surface will soon approach a level, so as to leave less than 7 feet in depth at the western termination.†

By plan No. 4, not only will this difficulty be obviated, but also in case of a break west of Rochester, the canal may for a few days, (while the break is repairing,) be supplied from the Genesee Valley canal.

This is practically impossible by either of the other plans.

Hence, in view of all the circumstances of the case, it is deemed best to adopt plan No. 4, subject to such modification as may be necessary, on a final location, to suit the features of the route; the general plan being to have the bottom of the canal level with floor of the Rochester aqueduct, and to have the tow-path and berme banks raised high enough at Lockport, to be able, when necessary, to give the water surface an inclination sufficient to send eastward the amount required in time of the obstructions caused by aquatic plants, &c.

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* See report of Canal Commissioners, Senate Doc. No. 30, for 1849.

† See report of O. W. Childs, Esq., Chief Engineer, dated 30th December, 1847. Ass. Doc. No. 16, for 1848.

From Rochester to the Montezuma level.

It has been found on the Erie canal that occasionally crowds of boats collect above the locks, and acting as a sort of a dam materially hinder the passage of water (to the locks,) so as to effectually prevent the rapid locking of boats. In order to obviate this difficulty, it is recommended that at the head of each lock, the canal be made 1½ feet deeper than ordinary for the first quarter of a mile, and that the bottom in the next mile gradually rise to the ordinary level.

This will add a small amount to the cost of the canal, but will be a great benefit to, and materially increase its capacity, doing away to a great degree with the detentions caused at the locks.

The first 20 miles east of Rochester should be constructed with a surface inclination of half an inch to a mile.

The next 20 miles with one-third of an inch per mile of surface inclination.

The remainder of the distance with an inclination of about ⅕ of an inch per mile.

The tow-path and berme should be raised high enough to be able to double these inclinations of the surface, wherever it may be necessary.

On the short levels it is practically of no consequence to allow for these slight inclinations in the construction of the canal. But when a level is more than four or five miles in length, they should be taken into account.

If the canal be constructed on this plan, it is believed that the necessary amount of water for its use will be entirely under control, and that there will be no difficulty at any time to supply the enlarged Erie canal between Tonawanda creek and the Montezuma level, with the water of Lake Erie.

All of which is respectfully submitted.

HENRY TRACY,
Civil Engineer.

ALBANY, *December* 27, 1849.

Note.—In this report I have made no mention of the water of Oak orchard creek feeder. This is only a small amount (last summer being but 800 cubic feet a minute) and is thrown in for additional contingencies.

Mr. O. Allen, from the committee on canals, to which was referred so much of the Governor's message as relates to the completion of the State canals, submits the following report :

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The Governor's message, after very ably illustrating the necessity and policy of an early completion of the State canals, and referring to the Constitution, which restrains the Legislature from borrowing money, suggests several methods for securing the means to complete the canals at an early day.

Will the proposed fund be sufficient and certain?

To ascertain whether it will be *sufficient*, we will inquire as to the extent of the draft that will be made upon it.

To determine whether it will be *certain*, we will examine the nature and extent of the revenues from which it is proposed to be accumulated.

By the very able report of the State Engineer, it appears that it will require, to complete the enlargement of the Erie canal, the Genesee Valley, and Black River canals, as follows:

The cost of completing enlargement work under contract, not done		$1,822,183 17
Estimated cost of work not under contract:		
Eastern Division	$2,119,146 04	
Middle Division	856,996 62	
Western Division	4,712,005 62	
		7,688,148 28
To complete the Black River canal		388,888 00
To complete the Genesee Valley canal		608,922 00
Total cost		$10,508,141 45

1. Of the capacity of the enlarged canal to *carry*, as compared with the present canal:

The small canal admits boats 78 625-1000 feet long, 14 46-100 feet beam, and 3 5-12 feet draught. Their average capacity is 79 63-100 (say eighty) tons.

The large canal admits boats 98 feet long, 17 5-12 feet beam, and 6 5-12 feet draught. Their capacity is 224 tons.

The proportion of down to up freights being as four to one, the average loads each way cannot exceed 50 tons for the small, and 140 tons for the large boats.

It appears from the reports of the State officers that no more than 52,000 lockages, on the average, can be made per season. 52,000 lockages of 50 tons each is 2,600,000 tons, which is the maximum capacity of the present canal *to carry*. 52,000 lock ages of 140 tons each is 7,280,000 tons, which is the capacity of the enlarged canal *to carry.*

The relative capacity to carry, therefore, between the large and small canal is about as three to one. The total movement upon the canals for the past season was equal to 2,454,233 tons, producing $3,484,568 in tolls; 2,600,000 tons, which is the maximum capacity of the present canal, would produce at same rates $3,692,000, while 7,280,000 tons, which will be the maximum capacity of the enlarged canal, would produce at same rates the enormous sum of $10,337,600.

2. Of the capacity of the enlarged canal to *compete* with rival routes by cheap transport:

The cost of towing a small boat on the present canal, at the rate of two miles per hour, is proved by the experience of forwarders for twenty-five years to be fourteen cents per mile, and the expense of officers and crews, &c., eleven cents per mile. Take the total cost of keeping the canal in repair and divide it by the number of miles boats are moved, and it shows that the repairs of the canal are equal to 6 5-10 cents per mile movement. The total estimated annual depreciation of boats upon the canal, divided by the number of miles of movement, is equal to 13 7-10 cents per mile.

Cost of towing per mile	14 cents.
Cost of officers and crew per mile	11 do
Repairs of canal	6 5-10 cts.
Depreciation of boats	13 7-10 cts.
Total cost	45 2-10 cts.

per mile for moving a small boat carrying 80 tons down freight, or 5 65-100 mills per mile, equal to $2.05 6-10 per ton from Lake Erie to tide water, 364 miles. Nine and a quarter barrels of flour being equal to one ton, the cost of moving a barrel of flour is 61-100 mill per mile, and 22 2-10 cents from Lake Erie to Albany, 364 miles.

It has been assumed that the cost of towing the large boats upon the enlarged canal, as compared with the small boats upon the present canal, will be as the area of a transverse section of the large to the small boat. It is mathematically certain that the ratio cannot be less, and we will show that it is decidedly more favorable to the large boat.

14 46-100 feet beam and 3 5-12 feet draught give the area of the transverse section 43 38-100 square feet for the small boat.

17 5-12 feet beam and 6 5-12 feet draught give the area of the transverse section 105 square feet for the large boat.

If to move 43 38-100 one mile, at the rate of two miles per hour, requires 14 cents, to move 105 one mile at same rate will require 33 88-100 cents.

This result would be mathematically certain if the circumstances of the movement of the large and small boats were identical, but they are not. There are elements not observed in the above calculation, which are greatly favorable to the large boat and canal.

A boat moved upon a narrow water way meets with great resistance from the movement of the water to replace that which has been displaced by the passage of the boat. This resistance is greatest where the water way is smallest, as compared with the area of the transverse section of the boat, and diminishes as the difference between the areas of the water way and the boat increases.

It follows that the motive power required to move a craft at any given rate of speed is seriously affected by the existing proportion between the areas of the transverse section of the water way and the boat, upon the respective canals.

The present canal is 40 feet wide at water surface, and 28 feet at bottom; mean width 34 feet, depth 4 feet, showing the area of the transverse section to be 136 square feet. Area of small boat 43 38-100 square feet. Area of small canal to area of small boat about three to one.

The enlarged canal is 70 feet at water surface, 52½ at bottom, mean width 61¼ feet, showing the area of the transverse section to be 428¾ square feet.

Area of large canal 428¾. Area of large boat 105, or about four to one.

The motive power required to move the small and large boats do not, therefore, bear the same proportion as the areas of the transverse sections of the respective boats. But the advantage is decidedly in favor of the large boat and enlarged canal, arising from the larger relative dimensions of the water way.

The per cent. of this advantage is not susceptible of mathematical demonstration, *but experience proves the value of it*, as it is found operating upon the movement of large boats in the large canal.

Upon the present canal, boats are moved *by two horses*, at the average rate of two miles per hour. Long experience has proved that to be the economical rate of speed. It is proved also, by actual experiment with both classes of boats, that the large boats upon the enlarged canal are economically moved at the same rate of speed by *three horses.* Though the addition of the third horse does not in fact increase the towing charges fifty per cent., it is assumed for the purposes of this comparison that fifty per cent. is added to the towing expenses.

Experience proves that the cost of officers and crew, &c., are the same upon the large and the small boat.

The cost of movement of large boats upon the enlarged canal is:

Cost of towing per mile	21	cents.
do officers, crew, &c	11	do
Repairs of canal	6.5	do
Depreciation of boats	13.7	do
Total cost	52.2	do

per mile for moving a large boat, carrying 224 tons, down freight, or 84 8-10 cents per ton from Lake Erie to tide water, 364 miles; equal to ¼ mill per mile upon a barrel of flour, or 9 1-10 cents from Lake Erie to tide water, 364 miles.

Railroads.—The cost of transporting freights upon railroads is shown by the report of the State Engineer to be 8 mills per ton per mile, equal to 86-100 mill per mile on a barrel of flour.

These amounts of cost, both upon the canals and railroads, represent all elements of actual expenditures, including the repairs of the several works and the depreciation of property, but excluding interest upon investment and profits, tolls and dividends, except that in the case of the canals, the amount charged to repairs is derived from the tolls.

The following tabular statement will show in juxtaposition the dimensions and capacity of the large and small boats, the relative cost of transportation towards tide water upon the enlarged and present canal and railroads, exclusive of tolls, dividends, or profits:

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TABLE

Showing the relative dimensions and capacity of boats, the cost of moving freight towards tide water on the present canal, enlarged canal, and upon railroads.

	Small boats.	Large boats.	Railroads.
Length of boat	$78\frac{625}{1000}$ feet.	98 feet.	
Beam	$14\frac{46}{100}$ do	$17\frac{5}{12}$ feet.	
Depth of draught	$3\frac{5}{12}$ do	$6\frac{5}{12}$ feet.	
Burden	80 tons.	224 tons.	
Cost of towing per mile	14 cents.	21 cents.	
Cost of officers and crew	11 cents.	11 do	
Repairs of canal	$6\frac{5}{10}$ cents.	$6\frac{5}{10}$ cents.	
Depreciation of boats, &c	$13\frac{7}{10}$ cents.	$13\frac{7}{10}$ do	
Boat, total cost per mile	$45\frac{2}{10}$ cts. $91 for 80 tons.	$25\frac{2}{10}$ cts. $116 on 224 tons.	
Cost per ton per mile	$5\frac{65}{100}$ mills.	$2\frac{1}{3}$ mills.	8 mills.
Cost per ton for 364 miles	2.05\frac{6}{10}$	$84\frac{8}{10}$ cents.	
Cost per bbl. flour per mile	$\frac{61}{100}$ mill.	$\frac{1}{4}$ mill.	$\frac{86}{100}$ mill.
Cost per bbl. flour for 364 miles	$22\frac{2}{10}$ cents.	$9\frac{1}{10}$ cents.	

Railroads.

From Buffalo to Albany.	
Cost per ton for 325 miles	$2 60
do bbl. flour, same	28
From Dunkirk to New York.	
Cost per ton for 445 miles and ferry	4 02
do bbl. flour on same	43½
From Ogdensburgh to Boston.	
Cost per ton for 400 miles	3 20
do bbl. flour on same	34½
From Buffalo to Boston.	
Cost per ton for 525 miles	4 20
do bbl flour for same	45
From Albany to Boston.	
Cost per ton for 200 miles	1 60
do bbl flour, same	17

Flour in barrels, from its weight, bulk, and value, is deemed a fair representative of canal freights.

In the following comparison, therefore, of the relative cost of transportation, exclusive of tolls, dividends or profits, the cost of carrying flour will be used. This camparison of routes is made for the purpose of illustrating the *capacity* of the enlarged canal *to compete* by cheap transport.

We give the cost of carrying flour from a common point at the west, say Detroit, to the cities of Boston and New York, by the several routes. The prices of lake freight being the average prices actually paid, which includes the profits, and in the case of the Ogdensburgh route, it includes Welland canal tolls.

1. From Detroit to Boston, by way of Ogdensburgh:

Detroit to Ogdensburgh, lake freight	30	cents.
Ogdensburgh to Boston	34½	do
Total	64½	do

By way of Buffalo.

Detroit to Buffalo, lake freight	12	do
Buffalo to Boston, railroad	45	do
Total	57	do

Detroit to Buffalo, lake freight	12	cents.
Buffalo to Albany, canal	9.1	do
Albany to Boston, railroad	17	do
Total	38.1	do

Ogdensburgh route to Boston	64½	do
Canal route	38.1	do
In favor of canal route	26.4	do

Centre railroad route	57	do
Canal route	38.1	do
In favor of canal route	18.9	do

2. From Detroit to New York, by way of New York and Erie railroad:

Detroit to Dunkirk, lake freight	12	cents.
Dunkirk to New York	43½	do
Total	55½	do

By way of Buffalo

Detroit to Buffalo, lake freight	12	do
Buffalo to Albany, railroad	28	do
River charges	8	do
Total	48	do

Detroit to Buffalo, lake freight	12	do
Buffalo to Albany, canal	9.1	do
River charges	8	do
Total	29.1	do

Dunkirk route	55½	do
Centre railroad route	48	do
In favor of Centre railroad route	7½	do

Centre railroad route	48	cents.
Canal route	29.1	do
In favor of canal route	18.9	do
Dunkirk route	55½	do
Canal route	29.1	do
In favor of canal route	26.4	do

An examination of the statistics of population of the States of the Mississippi valley will illustrate in a striking manner the difference in the rate of increase of the free States, which carry on their trade chiefly through our channels, and the slave States which trade chiefly with New Orleans.

The population of the following States in the following years was,

States.	1800.	1810.	1820.	1830.	1840.
Ohio	45,365	230,760	581,484	937,903	1,519,407
Indiana	4,875	24,520	147,178	343,031	685,866
Illinois		12,282	55,211	157,445	475,183
Michigan		4,762	8,896	31,639	210,267
Wisconsin					43,112
Iowa					30,945
	50,240	272,324	792,796	1,470,018	2,964,780

The increase from 1800 to 1840 was 5,801 per cent., or 145 per cent. per year. The increase from 1830 to 1840, was 102 per cent., or over 10 per cent per year.

The population of the following States was, at the same periods, as follows:

States.	1800.	1810.	1820.	1830.	1840.
Kentucky	220,955	407,511	564,317	687,917	779,828
Tennessee	105,602	261,727	422,813	681,904	829,210
Mississippi	8,850	40,352	75,448	136,620	375,664
Louisiana		79,566	153,407	215,739	352,411
Missouri		20,845	66,586	140,455	383,702
Arkansas		14,483	30,388		97,574
	335,407	824,484	1,312,959	1,862,635	2,818,389

In these States the increase from 1830 to 1840 was 51 per cent., or 5 13–100 per cent. per year. In the north-western

States, 10 per cent. per year for the same, while in the Union, from 1800 to 1840, it was 6 7–10 per cent. per annum only.

The population of the eastern and northern States are becoming more and more occupied in manufactures, and therefore produce a constantly decreasing ratio of agricultural products, and look more and more to the west to supply that deficiency.

From data and calculations which it is not necessary here to state, it appears that the increase of capital and wealth, or money and commodities compared with population, is as 50 to 31. (Say 5 to 3.)

The north-western States having increased in population 102 per cent. in 10 years, or 10⅕ per cent. per year, the products of these States will have increased in the same period 167 per cent., or nearly 17 per cent. per year, and though the eastern and northern States have not, during the same period, increased in population at an equal ratio, yet by reason of the immensely productive power of machinery in these States, the increase in wealth and products have been equal, if not beyond, the rate of the western States.

The following table shows the amount expended each year, from 1826 to 1850, inclusive, for repairs upon all the canals. The aggregate expenditures and the average annual expenditure:

1826	$182,162
1827	232,472
1828	234,483
1829	254,433
1830	221,005
1831	180,773
1832	344,917
1833	372,789
1834	478,964
1835	432,105
1836	406,122
1837	492,144
1838	481,824
1839	379,769
1840	460,686
1841	357,820
1842	452,559
1843	383,076
1844	464,384
1845	520,452
1846	510,355
1847	496,421

1848	$647,826
1849	521,130
1850	611,038
Total	$10,146,709

Average annual expenditure, $405,868.

Average annual expenditure for repairs	$405,858
Annual expenses of collection	70,000
Average annual expenditure for 25 years past	$475,868

STATEMENT,

Showing the total amount of money expended by the Canal Commissioners on the enlargement of the Erie canal to the 30*th September*, 1850, *with the interest on the same at the rate of six per cent. per annum, to* 1*st of April*, 1854 ; *interest compounded semi-annually, the total interest together with the total expenditure and interest, including no part of the cost of the original construction.*

YEAR.	Amount expended.	No. of years.	Interest at 6 percent.
1835	$31,810 70	18½	$63,074
1836	53,218 83	17½	96,416
1837	636,312 17	16½	1,050,106
1838	1,163,196 12	15½	1,742,700
1839	2,237,785 74	14½	3,031,986
1840	3,234,749 66	13½	3,946,747
1841	2,518,309 72	12½	2,751,253
1842	1,521,152 51	11½	1,479,321
1843	530,801 54	10½	456,171
1844	418,692 06	9½	315,191
1845	155,130 43	8½	101,191
1846	70,012 35	7½	39,012
1847	62,331 30	6½	29,183
1848	634,573 08	5½	243,676
1849	1,000,323 97	4½	304,699
1850	1,365,695 00	3½	313,836
	$15,634,095 18		$15,963,562

Total expenditure	$15,634,095 18
Total interest	15,963,562 00
	$31,597,657 18

In order to remove all doubt as to the constitutionality of the bill, the chairman of your committee addressed a note to the Hon. John C. Spencer, submitting to him the plan, asking his opinion thereon. His answer is subjoined, together with the concurrence of Samuel Stevens and Daniel Lord, Esquires, which it is believed is conclusive on that point.

ORLANDO ALLEN,
JOHN J. TOWNSEND,
CALEB LYON, of Lyondale,
ALEXANDER GRAHAM.

PROGRESS OF THE CANALS IN 1851.

The following extratsc, in relation to the completion of the enlargement of the Black River and Genesee Valley canals, are taken from the report of Mr. O. Allen, chairman of canal committee: (See pages 317 to 327 inclusive.)

Act for completing the enlargement of the Erie, Black River and Genesee Valley canals, passed July 10, 1851, and appropriated (provided the work should not exceed 10 per cent.) the sum of $10,508,141. Pending its passage, April 9, the Attorney General, Mr. Chatfield, declared in the following language its provisions unconstitutional: "I have examined all the provisions of this bill, which the time allowed me by the Senate has permitted, and I have come to the conclusion, unhesitatingly, that the whole scheme is a direct, open, and palpable infraction of the Constitution."

Daniel Webster (in answer to a majority of the Senate canal committee) decided that in his opinion, "on the whole, the bill was not in any of its provisions repugnant to the Constitution of New York." This decision was made April 11, 1851.

Tolls on railroads were abolished by act, July 10, 1851.

Report of the Canal Commissioners, in answer to a resolution from the Senate in relation to size of canal east Syracuse.

STATE OF NEW YORK:
CANAL DEPARTMENT,
ALBANY, *July* 3, 1851.

To the Honorable the Senate:

In answer to the following resolution the Canal Board respectfully report:

"IN SENATE, *April* 14, 1851.

"*Resolved,* That the Canal Board is requested to report, with as little delay as possible, whether any, and what plan has been adopted or formed for increasing the size of the enlargement of the Erie canal, or any part or section thereof, between Buffalo and Syracuse, beyond the width of seventy feet, and what part, if any, is contemplated to be increased in size; and also, to report to the Senate copies of all resolutions adopted by said Board since January 1, 1850, relating to increasing the size of any part of the enlargement beyond the width of seventy feet; and also, copies of all resolutions adopted by said Board since July 1, 1850, relating to the lengthening the locks on the Montezuma level."

On the 20th July, 1848, the Canal Board resolved to enlarge the Erie canal from the Erie avenue, in the city of Buffalo, to the north-westerly termination of section No. 3, being 9,930 feet in length, to eight feet depth of water, and one hundred and fifty feet wide at top-water line.

When this resolution was adopted, no plan had been fixed upon for passing Black Rock harbor, nor is it yet settled whether the navigation shall continue as it is, or an independent canal be made to pass this point. It is the opinion of many of the navigators on the canals, and of almost all the fowarders, that the enlargement should pass this harbor by an independent canal. Indeed it is esteemed by many as the only safe method of making a perfect navigation on this part of the canal; and it is believed by them that true economy will be promoted by its construction.

An examination of the annual reports of the Canal Commissioners, from the first opening of the navigation of this canal down to the present time, shows that the repairs upon this harbor have been exceedingly large, and that each succeeding year has increased them, and developed a fact, that if the navigation is continued as at present, under-water excavators must be continually employed to take out the alluvial deposits, in order to maintain a depth of seven feet water.

The attention of members of the Senate is respectfully called to the history of the navigation. and the repairs at this harbor, as set forth in the annual reports of the Canal Commissioners.

It appears that the difficulties attending the maintenance of the navigation at this harbor, have been steadily increasing from year to year, and it has become an important question with regard to the enlargement, how they are to be overcome.

It is well known that the surface of the lake has, more than once, fallen below the level adopted for the canal, which is supposed to be, beyond a doubt, below the most extreme low water mark. This, connected with the fact that the canal from Pendleton to Montezuma is to be fed from Lake Erie through this portion of the canal, is another consideration in favor of the independent line, because by it a higher head may be obtained.

It was evident to the Board that, if the independent line should eventually be adopted, that the large volume of water required to maintain the navigation of 159 miles of the enlarged canal, would, under the circumstances—to wit, the slight declivity in the canal between Buffalo and Tonawanda, and the crowded navigation at this important terminus—render necessary a large and spacious channel between those places, and especially for that portion described in the above resolution, because of the great number of boats that will necessarily seek business therein, and lie, while loading, as obstructions to the passage of the water.

Besides this, the enlargement of the Erie canal is for no temporary period, and ample accommodations should be provided at all important points, to enable its business to be done with the utmost dispatch, and at the least possible expense.

On the 22d of September, 1849, the Board of Canal Commissioners "*Resolved*, That the enlarged Erie canal between Tonawanda creek and the guard lock west of Lockport, be constructed one hundred feet in width at top water line, with slopes in the prism of one and a quarter feet horizontal to one foot vertical, and eight feet depth of water."

Under this resolution, the Commissioners put 146 chains of the canal, to wit, sections Nos. 11, 12, 13, and 14, under contract, and on the 7th of September, 1850, the Canal Board, upon the recommendation of the State Engineer and Surveyor, resolved to construct sections Nos. 6, 7, 8, 9, and 10, (the remainder of the line between Tonawanda creek and Lockport,) on a plan of 90 feet width at top water line, and eight feet depth of water. The canal from Lockport west, through the rock cutting, for two and a half miles, is already enlarged, and the portion here referred to is that between the rock cutting and the guard lock.

On the 16th September, 1850, the Canal Board adopted th following resolution:

"*Resolved*, That the enlargement of the Erie canal through th villages of Brockport, Albion, and Medina, to the extent represented and described by the surveys, maps, plans, and specifications this day presented by the State Engineer and Surveyor, be and the same is ordered to be constructed of the dimensions required by the following description of the size of the canal, and upon the level described in the following resolution, to wit: At the lowest lock at Lockport, the mean width of the waterway of said canal shall be ninety-one feet, and the depth of the same nine feet; and from thence the water channel of said canal shall regularly diminish, (except where a saving of expense will warrant a wider channel,) to a mean width of sixty-two feet, and nine feet depth of water, at the point where the present enlarged canal in the city of Rochester is sixty-two feet in mean width; thence to the Rochester aqueduct to have a mean width of sixty-two feet, and a depth of nine feet water; and thence to the easterly end of said aqueduct, as the same now is; and thence to the first lock east of Rochester, said canal to have a mean width of waterway of sixty-two feet, and a depth of eight feet."

This resolution was passed in pursuance of section 3d, chapter 354, Laws of 1850, which requires the Canal Commissioners to enlarge the canal through the villages mentioned therein, and have the same completed by the first day of April, 1852, and directs the Canal Board to cause the State Engineer and Surveyor to make at once the necessary examinations and surveys to ascertain the proper level for the canal between Lockport and the first lock east of Rochester.

The plan of the Canal Commissioners and Engineers has ever been to supply the canal with water from Lake Erie as far eastward as the Montezuma level. (See their annual report of 1836, page 16; also of 1841, pp. 42, 43, and 44.)

The water of the Genesee river has been for several years turned into the Erie canal at Rochester, as a temporary feeder during seasons of drought; it is also used to feed the Genesee Valley canal. The mill owners at Rochester have ever protested against this, and have obtained from the Legislature an act recognizing their rights and empowering the Canal Board to make reservoirs of certain lakes, to throw the water therefrom into the Genesee river, to compensate for the water taken to feed the Genesee Valley canal.

Examinations and surveys have been made pursuant to the provisions of the law, and the quantity of water permanently diverted from the Genesee river has been ascertained to be, at the time of making the surveys, 4,650 cubic feet per minute.

It has never been in contemplation to make a *permanent* feeder to the Erie canal from the Genesee river. The extraordinary amount of business upon the canal in 1836 and 1837 required its use, and it was the plan of the Commissioners at that time to enlarge the canal between Lockport and Rochester at once, so that water might be brought from Lake Erie instead of taking that of the Genesee, and thereby depriving the Rochester mills of a large part of their power, greatly to their injury. The suspension law put a stop to the kind intentions of the Commissioners, and the use of the water of the Genesee has been continued in dry seasons, up to the present time. (See Canal Com. Report for 1841, pages 42, 43.)

It is the opinion of this Board that justice should be done to Rochester. The Legislature has acknowledged their claim, and their rights ought to be secured to them.

In 1841 there were four chief engineers employed on the Erie canal enlargement. By a resolution of the Canal Commissioners, the 12th April, 1841, these engineers were required to report to them "the amount of declivity necessary to be given to the bottom of the canal from the foot of the new locks at Lockport, to the aqueduct at Rochester; and also the width of the canal and height of banks necessary between these two points to secure a supply of water at all times from Lake Erie to the Seneca river *without resorting to the Genesee river.*"

Before the engineers could get the necessary data for their report the public works were suspended.

After the resumption in 1847, the Canal Commissioners called on Mr. Childs, one of the former chief engineers, who was still employed on the enlargement, for this report. It was published with the annual report of the Commissioners in 1848. From it we learn that 25,448 cubic feet water per minute would be required to start at Lockport to supply the canal from there to Montezuma level. This was to supply the losses by filtration, leakages, evaporation, and lockages for 122 miles, without making any provision to return to the Genesee river the water wasted by the Genesee Valley canal. We also learn from this report that a canal with a top-water surface of 81 2-10 ft.—10 8-10 ft. in depth at Lockport, and seventy feet top-water surface and eight feet deep at the first lock east of Rochester, will be required. And that this size is barely enough to supply the requisite quantity of water for navigation under the most favorable circumstances. No allowances are made for obstructions of any description, other than what a plain and straight channel will oppose. The surface declivity between the two extremes was to be 2.823 feet, and the bottom declivity 1.95 feet. This plan would raise the water 9.09 feet above the mitre sill at the lowest lock at Lockport.

Mr. Childs says, "admitting the loss from filtration through the bottom and sides of the canal and from leakages at the mechanical structures, to be as the square root of the pressure or depth of water, and as the area of the surface pressed; then the quantity required to supply the loss from these causes, upon the canal when enlarged, will be to the quantity required by the present canal, as 223.54 is to 100, &c."

He says the quantity used upon the present canal from the same causes, is 85 cubic feet per mile, per minute; it has been the practice to estimate it at 100 cubic feet per mile, per minute. He says, also, that 190 cubic feet per mile, per minute, will supply the losses by the same causes, for the enlarged canal between Lockport and the first lock east of Rochester.

Let us apply the above rule to the dimensions of the canal, as recommended by him, between those two places, and see if 190 cubic feet per mile, per minute, will be enough.

When Mr. C. says that "the quantity required to supply the loss from these causes upon the canal when enlarged, will be to the quantity required by the present canal, as 223.54 is to 100," he undoubtedly means an enlarged canal of 70 feet top water, 42 feet bottom, and seven feet in depth; for we find by applying the rule above quoted, the statements to be as follows: The old canal is four feet deep, 28 feet bottom, with slopes 1½ to 1; so that the "surface pressed" is equal to 38.16 feet area for each lineal foot. The enlarged canal ordinarily is 7 feet deep, 42 feet bottom, slopes 2 to 1, and the "surface pressed" is equal to 64.18 feet per each lineal foot.

Now, if the old canal were 7 feet deep, the filtration would be as $\sqrt{4} : \sqrt{7} :: 85 : 112{,}41$ cubic feet per mile, per minute, instead of 85; so that the filtration of the enlarged canal of the ordinary size, will be, say as 38 : 64 : : 112,41 : 189,32; very nearly 190 cubic feet per mile, per minute.

Now the dimensions of the canal recommended in this report of Mr. C. are, according to the tabe No. 2, 10.80 feet deep, 38 feet bottom, slopes 2 to 1, at Lockport, and at and near Rochester 8 feet deep, 38 feet bottom, slopos 2 to 1.

Now the $\sqrt{10.80}=3.28$.
and the $\sqrt{5.40}=2.32$.

The length of the slopes at Lockport=48.30.

3.28 : 48.30 : : 2.32 : 34.17, the width of bottom that would discharge a quantity equal to that discharged from the slopes; so that the "surface pressed" at Lockport is $38+34.17=72.12$. Now $\sqrt{4}$: $\sqrt{10.80}$: : 85 : 139.40, the quantity the old canal would waste if it were 10.80 feet deep, and we shall get the quantity which the first mile at Lockport will waste by the following proportion, 38 : 72 : : 139.40 : 264.13 cubic feet per mile per minute, at Lockport; and at Rochester it wil lbe $\sqrt{4}$: $\sqrt{8.}$: : 85 : 120.27 and the surface pressed will be equal to 63.36, so that 38 : 63.36 : : 120.27 : 200.53 cubic feet per mile per minute at Rochester.

Now $\frac{200.53+264.13}{2}\times$ 63.55 miles between the two places equals 14764.57 cubic feet per minute required for the whole distance or 232.33 cubic feet per mile per minute, instead of 190. Mr. C. estimates 13290 cubic feet per minute as the quantity necessary to pass Rochester $14764.57+13290=28054.57$ cubic feet per minute required according to his rule, to start from Lockport to supply the "leakage, filtration and evaporation" on the whole 122 (126) miles, instead of 23181.10 as he gives the figures.

He has calculated the distance only to Pit lock; that is now to be abandoned and the level raised to the elevation of that above the lock, and four miles must be added to the distance, making it 126 miles instead of 122. This increases the quantity $208.59\times4=834.36$.

Then he is rather too particular in providing for lockages. It is believed to be the best policy where the source of supply is ample, to provide means sufficient to pass water enough to supply all the lockages that will become necessary to pass boats in both directions without regard to the probabilities in favor of saving water by the meeting of boats at the locks passing in opposite directions.

When the source of supply is limited, it is good policy to show to the public, and to capitalists especially that one lock full of water will pass one boat each way, and by the doctrine of chance to show the probable proportion of single lock fulls that will b used to pass two boats. This gives confidence in the ability o the work to perform a given amount of business.

According to the terms of the proposition in this report of Mr. Childs, to wit: that the "loss by leakage, filtration, &c.," is as the square root of the pressure, and as the area of the surface which is believed to be true, instead of increasing the quantity by 190 cubic feet per mile per minute between Rochester and Lockport, he should have increased it by 232.27 cubic feet per mile per minute making a deficit in his calculations of 2,686 cubic feet per minute to be passed at Lockport. Add to this the loss by the same causes on four additional miles of canal, 835 cubic feet per minute, and his deficient calculations for lockage water, 1,733 cubic feet per minute, and for leakage at last lock and waste by the flowing of boats from the locks, 1,200 cubic feet per minute, and we have 31,904 cubic feet per minute as the quantity which Mr. C. should have based his calculations upon as necessary to pass the Lockport lock for the use of the canal. To this amount must be added the quantity necessary to compensate the Rochester water power, 4,105 cubic feet per minute, making a total of 36,009 cubic feet to be passed at Lockport, and for which a channel is to be provided thence to Rochester, allowing an average loss on each mile of 232 cubic feet per minute.

In 1849 Henry Tracy, C. E., was employed to examine and report upon the same subject.

Mr. Tracy's report was published in 1850. From this we learn that 29,600 cubic feet of water per minute would be required to start from Lockport for the purpose of supplying the loss by filtration, evaporation, leakage and lockages, making no provision for the Rochester millers.

The plan recommended by Mr. Tracy is a canal with 85 feet width of surface at Lockport, 13.2 feet depth of water, and 70 feet surface at the first lock east of Rochester, and seven feet depth. Surface declivity 6.2 feet; the bottom to be level. His plan raises the water 9.54 feet above the mitre sill of the lowest lock at Lockport.

Both of the plans, it will be noticed, contemplate raising the water to an extraordinary elevation above the mitre sill at Lockport.

The citizens of the villages along this line apprehended great inconvenience to their roads and dwellings in consequence of this extreme height of water, and supposing there was no possible means of avoiding it, other than cutting down the bottom of the Rochester aqueduct, they set about devising a way to ascertain whether this could be done, and procured the passage of the section of the appropriation law of 1850 above quoted.

The Canal Board, acting under this law, directed the State Engineer and Surveyor to examine the subject and report as soon as possible.

On the 12th September, 1850, he reported the following as the proper level for the canal between the two points designated in the law, to wit:

"Beginning at a point seven feet six inches above the mitre sill at the lowest lock in Lockport, and flowing on a regular inclined plane to a point seven feet four inches above the bottom of the Rochester aqueduct, at the distance of one hundred feet west thereof: thence on a regular inclination to the first lock east of Rochester to a point seven feet above the level of the bottom of said aqueduct."

The Board adopted this as the top water level of the canal. The size and form of the prism of the canal is not yet fixed for the whole distance; but the dimensions given in the above resolution are those recommended by the State Engineer and Surveyor for the whole distance between the extreme points named in the resolution, in case a supply of water for the canal from Macedon to Montezuma cannot, for a reasonable expenditure, be had from the Canandaigua lake.

Should the examinations prove this to be practicable, and it should be deemed good policy to construct a feeder from that lake to the Macedon level, the dimensions of the canal between Rochester and Lockport may be reduced to the ordinary size, with an additional sectional area sufficient to supply to the Rochester millers the water wasted by the Genesee Valley canal. The Board deems this a necessary element in determining the proper dimensions for the canal between these two places, because it is believed to be less expensive and objectionable than a resort to the lakes before mentioned.

The necessity of putting the work under contract through the villages of Brockport, Albion and Medina, at an early day, to enable the Canal Commissioners to comply with the statute, compelled the Board to adopt the largest dimensions suggested fo the prism of the canal at those places.

There will be no disadvantage in this, should the remainder o that level, after further investigation, be reduced to less size i the prism.

The engineers estimate the quantity of water as necessary to start from Lockport, as follows:

	Cubic feet.
Leakage, waste, and evaporation, on 126.30 miles	27,794
Lockages for 11 lockages per hour	4,000
Compensation to Rochester water power	4,105
	35,899

The velocity between Lockport and Rochester, 44.4 feet per minute, or about half a mile per hour.

The above are all the variations from the width of 70 feet, made by the Canal Board between Buffalo and Syracuse.

The canal is constructed wider than 70 feet at various points along the whole line, whenever a reduction of cost can be made thereby.

Herewith are all the resolutions of this Board called for by the Senate, numbered 1 to 5 inclusive.

(No. 1.)

STATE OF NEW YORK:
CANAL DEPARTMENT,
ALBANY, *January* 21, 1851.

At a meeting of the Canal Board:

Resolved, That the Canal Commissioners be directed to lengthen the locks between Syracuse and Rochester, so as to admit the largest class of boats now plying upon the Erie canal, in pursuance of the law of 1849, chapter 233.

(No. 2.)

STATE OF NEW YORK:
CANAL DEPARTMENT,
ALBANY, *Feb.* 10, 1851.

At a meeting of the Canal Board:

Resolved, That the resolution of this Board, of the 21st January last, directing the lengthening of the locks between Syracuse and Rochester, be, and the same is hereby rescinded.

(No. 3.)

STATE OF NEW YORK:
CANAL DEPARTMENT,
ALBANY, *Feb.* 18, 1851.

At a meeting of the Canal Board:

Resolved, That the Canal Commissioners be authorized to lengthen and widen the old locks between Syracuse and Rochester, by the opening of navigation, if in the judgment of the Canal Commissioners and State Engineer and Surveyor, it can be done consistently with the interests of the State; and if the Commissioners and Engineer shall determine that the locks cannot be enlarged with safety, by the opening of navigation next spring, then the Commissioners are directed to enlarge the same by the opening of navigation in the spring of 1852.

(No. 4.)

STATE OF NEW YORK
CANAL DEPARTMENT,
ALBANY, *Sept.* 7, 1850.

At a meeting of the Canal Board:

The State Engineer and Surveyor having presented to the Board the maps, plans, estimates and specifications of sections No. 6 to No. 10, inclusive, of the Erie canal enlargement west of Lockport, at an estimated cost of $382,033.41 on a plan of 8 feet depth of water, and 90 feet width of surface, to be completed by the first day of April, 1853: Also of sections No. 79 to 106 inclusive, excepting sections No. 91 and No. 98, on the Genesee Valley canal, extending from the Genesee river feeder to Olean; also 19 road bridges and 19 farm bridges; also 33 locks, and necessary culverts, and other structures on the same sections, at an estimated cost of $394,204.07, to be completed by the first day of April, 1853; also of sluices for 70 locks on the Black River canal, to be completed before the opening of navigation in the spring of 1851, at an estimated cost of $15,771:

Resolved, That the said maps, plans, estimates and specifications be, and the same are hereby adopted.

(No. 5.)

STATE OF NEW YORK:
CANAL DEPARTMENT,
ALBANY, *Sept.* 16, 1850.

At a meeting of the Canal Board:

Resolved, That the enlargement of the Erie canal through the villages of Brockport, Albion and Medina, to the extent represented and described by the surveys, maps, plans and specifications this day presented by the State Engineer and Surveyor, be, and the same is ordered to be constructed of the dimensions required by the following description of the size of the canal, and upon the level described in the following resolution, to wit: At the lowest lock at Lockport the mean width of the water way of said canal shall be ninety-one feet, and the depth of the same nine feet; and from thence the water channel of said canal shall regularly diminish, (except when a saving of expense will warrant a wider channel,) to a mean width of sixty-two feet, and nine feet depth of water, at the point where the present enlarged canal in the city of Rochester is sixty-two feet in mean width; thence to the Rochester aqueduct, to have a mean width of sixty-two feet, and a depth of nine feet water; and thence to the easterly end of said aqueduct as the same now is; and thence to the first lock east of Rochester; said canal to have a mean width of water way of sixty feet, and a depth of eight feet.

CHRISTOPHER MORGAN,
Secretary of State.
PH. C. FULLER,
Comptroller.
A. HUNT, *Treasurer.*
H. C. SEYMOUR,
State Engineer and Surveyor.
CHARLES COOK,
FREDERICK FOLLETT,
Canal Commissioners.

The dimensions adopted by the Canal Board in September, 1854, for the canal on the long level extending from Lockport to the first lock east of Rochester, were as follows: 91 mean width, and 9 feet depth at Lockport; 62 ft. mean width, and 7¼ ft. depth at Rochester. The bottom line at Lockport to be 1¼ feet below the top of the mitre sill of the lower lock at that place, and descend thence on a regular inclination to a point two inches below the bottom of the aqueduct at Rochester.

On all completed sections the water, during the past season, has stood 6 feet deep and over, while the surface, when the work is fully completed, is to be raised at Lockport 1¾ feet, and at Rochester about one foot above its present height, which will afford 7 feet depth on all parts of the level, and more than that for the greater portion of the distance between these places.

For the purpose of obtaining a supply of water, mainly from Lake Erie, for this division of the canal, it was designed that the section of prism west of Rochester should be larger than that adopted on other portions of the line. Between Black Rock and Tonawanda the surface width is to be 80 feet, and bottom width 60 feet. From the village of Tonawanda to Pendleton the Tonawanda creek is used, and the bars which occur therein are to be dredged to the depth contemplated for the enlarged canal. From Pendleton to Sulphur Spring guard lock, surface width 100 feet; from guard lock to head of rock cut, 90 feet, and from this to head of combined locks at Lockport, 62 feet, with vertical sides. The water, during the past season, has stood 9 feet above the bottom line established for the several portions of canal above named.

Total number of boats of all classes on the canals, 5,568.

Cost to complete the Canals.

After the passage of the loan for $11,558,955, (10 per cent. added,) new surveys and estimates for letting were ordered by the Canal Board on the 28th July. These were completed Oct. 10th, 1851. Proposals were received until Nov. 18, and the opening of bids commenced on the 20th, and closed the 24th. Over 2,600 bids were received, which occupied the Engineers 12 days in canvassing. The following is the statement of estimated cost to complete the following canals at Engineer's and contract prices:

CANALS.	Length in miles.	Estimated cost.	
		Engineer's prices.	Contract prices.
Enlargement of the Erie canal..........	222¾	$8,774,685 22	$7,538,091 45
Black River canal..........................	48 44-100	237,540 00	222,076 60
Genesee Valley canal.....................	30	200,000 00	193,570 00
Totals..	....	$9,212,225 22	$7,953,738 05

Total amount of work under contract.......... $11,271,559 83
to complete 9,552,450 33

Enlargement Fund.

Amounts received, &c., from 1834 to Sept. 30, 1851: from tolls, to pay interest, $5,581,637.10; to pay for construction, $6,736,-

877.36; loans issued to pay for construction, $10,221,341.31; total, $22,539,855.

Drainage of Cayuga Marshes.

To the Honorable the Legislature of the State of New York:

The undersigned commissioners, appointed in pursuance of an act entitled "An act in relation to draining the Cayuga marshes," passed July 10th, 1851, report:

That soon after their appointment they held a meeting of the commissioners at Syracuse, and prepared directions to the State Engineer and Surveyor for such surveys and levels as they deemed necessary to an understanding of the subject upon which the law required them to report.

The unhealthiness of the district to be examined, and some other causes unforeseen at the commencement, prevented the completion of the labors of the Engineer as soon as was desired.

It appears that the report of the Hon. George Geddes, engineer in charge of the surveys and levels, was filed in the office of the late State Engineer and Surveyor on the 31st day of December last, and upon our application a copy was communicated to us by the present State Engineer and Surveyor on the 8th of January last, which we submit herewith, with the maps and profile accompanying the same.

We earnestly recommend this report of Mr. Geddes to the attention of the Legislature. It presents in a clear and practical manner the causes which have combined to create the vast marshes bordering on the Seneca river, and suggests the means by which they may be permanently reclaimed.

As soon as the work under charge of the principal engineer had so far progressed as to prepare him to afford us useful information, we accompanied him in an exploration, by water, of the Seneca river and Cayuga marshes, in which we made the only examination that can be made, except at times when the river and marshes are so frozen over as to allow of traveling upon them on the ice.

This personal inspection has been useful to us by aiding us to understand the scientific report of the engineer, and to appreciate the great importance of the improvement contemplated.

The commissioners met at the commencement of the present session of the Legislature, to prepare their report, intending to present the same within the time contemplated by the act of July 10th, 1851, but they were unable to find any records of the proceedings of the commissioners appointed under the act of 1825, and they deemed a knowledge of these of sufficient importance to delay the report until further searches could be made. Those searches have been prosecuted, and have within a few days been partially successful.

The delay of this highly important and necessary work for so long a time after the settlement of western New York, its suspension after a commencement, and its neglect until the last session of the Legislature, must be ascribed to the engrossment of the energies and resources of the State for the greater portion of the time, when the financial condition of the country would allow, in the prosecution of other great works of improvement.

The fact that the lands to be benefited belonged to a great number of individuals, and that the State had little or no direct interest in them by ownership, has probably been another cause of the neglect of the subject.

In the year 1825, under an act of the Legislature of that year, a survey, map, and assessment of all the lands embraced in the Cayuga marshes and swamps on the Seneca river were ordered to be made. This was accomplished, but the map cannot be found in the Comptroller's office, where it was required to be filed; but the field notes of the surveys, and the assessment roll, a copy of which accompanies this report, made by the commissioners appointed for that purpose, shows an aggregate quantity of near thirty thousand acres of land, appraised at an average price of less than eighty-four cents per acre.

We are informed that this survey does not include large bodies of land which will be greatly benefited by the reduction of the water of the river. We have no means of testing the accuracy of this information, but are induced to believe it is true, to an extent worthy of consideration, in providing for a future equitable assessment to defray the expenses of the improvement.

This immense body of land is in the heart of the most fertile, beautiful and prosperous part of the State, and is capable of being made itself of the most productive and valuable quality, instead of being, as it now is, not only utterly unprofitable and totally useless to its owners, but an unsightly blemish upon the fairest portion of our State, a colossal nuisance, and a source of continued and wide-spreading pestilence to the surrounding country.

The attempt to redeem these lands, made under the law of

1825, proved a failure. Instead of lowering the bed of the river on Jack's reefs, an attempt was made to reduce the streams by a cut across a short but elevated neck of land, requiring an immense expenditure in excavation above the natural surface of the river. Had the money expended upon this cross cut, in making a miniature canal through deep rock excavation, been expended in removing the reef itself, and the bar at Musquito point, the Cayuga marshes and swamps would long since have been what it is believed they are destined to be, and proprietors would have realized wealth from their ownership, after reimbursing the State for its expenditures in their improvement.

The elevated and rocky bottom at Jack's reefs, and the gravelly bar at Musquito point, are the principal barriers that hold up the waters of the Seneca river and spread them over these lands. Not only the best, but the only feasible plan of draining and reclaiming these lands is to remove these barriers — first, that at Jack's reefs, and next, that at Musquito point — to such an extent as to transfer the falls or rapids at those points successively to the next shoal water above them. These are not only the first, most material and important, but perfectly indispensable operations, and any work done previous to the removal of these two obstructions would be useless.

The estimated cost of the necessary excavations at these two points, Jack's reefs and Musquito point, according to the report of the engineer, is ninety-two thousand dollars. This once accomplished, it is believed that the remaining obstructions, being for the most part of very soft materials, under the force of the current created upon them by the removal of the two first, aided by the ordinary freshets of the stream, would soon be washed into the deep pools which are found below all these bars. At all events it would require but little assistance from a dredging machine to stir up the soft bottom, in aid of the current, to remove them effectually.

The estimated cost, according to the report of the engineer, of the whole work necessary to reclaim these marshes, is within the sum of one hundred and fifty thousand dollars, which the undersigned believe is a greater sum than will be necessary to accomplish it.

The question arises, from what sources and in what manner shall the necessary funds be obtained?

By the act of 1825 it was provided that an assessment roll, to which we have heretofore referred, of all the lands to be affected by the improvement, should be made out at their then value. The money for the work to be advanced by the State, and after its completion it was provided that a new assessment of the lands should be made at their improved value, and a tax levied upon them sufficient to reimburse the State the money advanced.

The same course may be adopted now. The average price of lands bordering upon these marshes is not less than thirty to forty dollars per acre. The marshes when reclaimed will be far more valuable than the adjacent lands, and amply sufficient to pay the necessary advance of the State, and leave a large profit to the owners, resulting from the operation.

In view of the facts herein presented, the undersigned respectfully recommend the passage of a law ordering the draining of the marshes on the Cayuga lake and Seneca river, providing for the reimbursement of the money to be expended thereon, by assessment on the lands benefited by the improvement.

All of which is respectfully submitted.

Albany, *February 12th*, 1852.

W. H. ADAMS,
H'Y FITZHUGH,
J. B. WILLIAMS.

Report of Civil Engineer.

Hon. Hezekiah C. Seymour, *State Engineer and Surveyor:*

Sir—I have made a survey of the Seneca river from Cayuga lake to Baldwinsville, with a view of answering the interrogations proposed by the commissioners appointed by the Governor to report a plan for draining the Cayuga marshes, and also with a view to the lowering of Cayuga lake.

I commenced my examinations on the 14th day of August last. Benches were established at various places on the shore of the river, early in September, with a view to observe the rise and fall of the water, and a party under the immediate direction of Levi Williams, civil engineer, commenced leveling on the first day of October; since which time we have been busily engaged in field and office work. The weather has been unfavorable, and it has been, therefore, necessary to make great exertions to accomplish what we have. Further surveys are necessary to determine the quantity of marsh and swamp injured by the water of the river. I cannot learn that this has ever been accurately done, but I have the quantity stated at from thirty thousand to fifty thousand acres.

In making my report I have, for convenience, followed the order of the interrogatories put by the commissioners.

1st. The highest water of Cayuga lake, for the last twenty years, was three feet and sixty hundredths above the lowest water of this year, the water being lower this year than it has been for many years previous. In 1831, the late James Geddes, civil engineer, made some examinations of the outlet of Cayuga lake, by order of the Canal Commissioners. From his report I made the following extract:

"When the deep and narrow cut was made across the bend of the Seneca river, below Cross lake, it was supposed that the operation would be to drain the water from the Cayuga marshes very low by midsummer, but that it would not be taken off sufficiently *early* in the season. Results have been quite otherwise. The spring floods recede until June or July, when the water commences rising and continues on the rise until the first of October, later or earlier, according to the setting in of the fall frosts, which cut down the luxurious growth of herbage that had risen in the bed of the river during the hot season and obstructed the passing off of the water.

* * * * * * * * * *

"The water in the outlet, and consequently in Cayuga lake, was higher in September and October than in April, raised and held up by the herbage growing in the bed of the river. The vegetables springing up here in warm weather are named by the fishermen *eel grass*, and classed by the botanists among the very numerous varieties of CONFERVA. This weed grows in shallow places on muddy bottoms."

The outlet of the Seneca and of the Crooked lakes discharges into the lower end of Cayuga lake, and sometimes freshets from these lakes are in the summer season discharged into the Cayuga, which being held up by the grass that obstructs its outlet, causes very great rises in the water. This eel grass fills the river in shallow places through the whole extent of the marshes, and causes the water to remain on them long after it would otherwise have passed off.

The outlet of Cayuga lake is shallow and narrow at the place where the lake ends and the river begins, having but 1,815 feet of water way; and as late as the 29th day of November last, more than a sixth part of this shallow channel was choked with weeds.

2d. The fall of the surface of the water, from a point above the Rochester and Syracuse railroad, as ascertained by levels that were taken in the month of October, 1851, to the top of the dam, as determined by the monument erected by authority of the State, at Baldwinsville, was 12.64 feet, and was distant from the place of beginning, measuring on the river surface, a little more than thirty-eight miles; measuring by the line of our levels, it was 222,450 feet, a little more than forty-two miles, and the fall was distributed as follows:

	Feet fall.	Feet.
From Cayuga lake to Seneca canal, distance	9.600	0.170
upper end of Free Bridge reef	16.200	0.341
lower do do do	17.800	1.200
Montezuma do do	36.000	2.593
Bluff point	57.600	3.665
Hard point	64.200	3.993
Campbell's island reef	67.500	4.157
foot of do	70.200	4.338
head of reef at Howland bridge	74.100	4.338
foot do do do	75.700	4.416
head of Musquito point reef	82.200	4.494
foot do do	86.400	4.989
Weedsport bridge, distance	111.000	5.448
Skaneateles creek, distance	126.000	5.747
west side of Cross lake	139.800	5.843
head of Jack's reefs canal	159.600	5.890
foot of Drake's mill race	167.400	5.989
Jack's reefs bridge	170.100	6.816
foot of reef	178.200	11.139
level of Baldwinsville pond	180.600	11.489
water at top of dam	222.450	11.967
top of dam as fixed by monument		12.642

The results differ at some points from what had been reported as the fall by persons who had previously made examination of this river; but there is nothing that cannot be accounted for and reconciled when the laws that regulate this stream are understood. The fall at the various points mentioned will vary with every change in the quantity of water running in the river, and as the weeds obstruct the flow of the water, our levels commenced on the first day of October, the weeds having dammed up the water in the lake and in the marshes; the river was low because the supply was cut off. When the weeds were killed by the frosts the lake fell, so that, on the sixth day of November, it was one foot and nine hundredths of a foot lower than when we commenced.

In the spring freshets the water rises at Musquito point as high as 5.14 feet above the water, when we took its height. If Cayuga lake should be at the same time at its highest mark, then there would be but two feet and twenty-three hundredths fall from the lake to Mosquito point.

3d. The channel of the Seneca river varies in width from 300 to 3,100 feet. Its width at the point where the Cayuga lake ends was, on the 29th day of November, 580 feet, and of an average depth at that place of 3.13 feet; at the place where the Jack's reef bridge crosses the river it is but three hundred feet wide, the shores being from eight to twelve feet higher than the surface of the water, consisting of slate and gravel; at Weedsport bridge the river is but 300 feet wide, the shores being low; at Musquito point the river was, on the 11th day of November, but 400 feet wide and of an average depth of three feet, the shores being from four to twelve feet above the water and the bottom and sides made of hard gravel.

Musquito point was but recently the lower end of Cayuga lake, and now as often as the water is very high it becomes so. At this place the hard land approaches the river on both sides, and the evidences that the river has worn its way down into the gravel some feet, are too strong to be resisted.

There are no places in the river so narrow as to make it necessary to widen the channel for the purpose of draining the marshes.

4th. As to the depth of the channel:—Soundings have been taken in the river with great care, at known distances apart, from the east end of the waterway through the Rochester and Syracuse railroad embankment, across the lower end of the lake to the deep water below Jack's reef, so as to give the requisite data to calculate the amount and character of the earth that it might be necessary to move to drain the marshes.

Below Jack's reef the soundings have been taken opposite stakes on the shores, but not from a line stretched on the water. The profile that is submitted with this report, will exhibit the top and bottom of the water as it was in October, and it is not necessary here to give the soundings.

The first shallow place is at the point where the lake ends, which is distant, in a direct line from the place of beginning, one mile and a half and five hundred feet. The water was here but four feet deep in the deepest place, the surface falling a third of a foot. The bottom is made of sand and mud, and, as has been remarked, the channel is much choked by weeds. This shoal is about fifteen hundred feet long. The next shallow is two miles from the place of beginning, and the water was but 3.60 feet deep. The bottom is mud and the shoal is but about 800 feet long. The fall in the surface of the water at this place is too little to be noticed.

The third shoal is known as the Free bridge reef, being three miles from the place of beginning, and is about 3,000 feet long. The fall of the surface of the water here is about 86-100 of a foot. The bottom is hard, consisting of coarse gravel. The water averages about four feet deep in the channel. At the lower end of this shoal there is an island, and the west channel, though only about 100 feet wide, is generally 8 to 9 feet deep, except where it joins the east and main channel, where the depth is only four feet.

At the head of Kipp's island, which is nearly five miles from the place of beginning, there is a bar on which the water was only three and a half feet deep. This shoal is about 1,700 feet long, and is made of sand and mud. Kipp's island is three and a half miles long, and is crossed by the Erie canal at Montezuma, which is about six and three-fourth miles from the place of beginning. The west branch of the river is deep, averaging about sixteen feet through; in one place it is for about 100 feet in length, only seven feet deep. This bar is below the canal, and is said to have been formed by the sinking of a raft at that place many years ago.

A little below the upper end of Kipp's island, a stream that is marked on the large maps of the State as "Clyde river" joins the Seneca. This river is formed by the outlet of Canandaigua lake and Mud creek, and is a very considerable stream, much more affected by freshets than in the Seneca river above its mouth. This river very often raises so high than when it meets the west branch of the Seneca, it divides its waters, and sending part of them south fills up Cayuga lake as well as the marshes.

The west channel of the Seneca at Kipp's island, is genera called by the inhabitants the Canandaigua river.

In constructing the enlarged Erie canal, it has been decided fill up this west branch where the canal crosses it, and cut a cana across the island to the east branch, for the discharge of Clyd river into it; the canal to cross the marshes high enough to pas the river under it. By this plan the whole water must go dow the east channel from a point above the canal, unless it is sen again across the island, which can be easily done by widenin and deepening the old canal.

Nine miles from the place of beginning. commences Bluff poin shoal, which, including Campbell's island shoal, is about thre miles and a half long, the water in many places being not mor than three feet in depth; above Bluff point the river and ba are 3,100 feet wide, across which the direct railroad from Rochester to Syracuse is now in the course of construction. The bottom here is soft mud, very easily moved by the dredging machin that has been used for excavating the foundation for the railroa bridge. The fall in this shoal (including what is called Campbell's island reef,) is one foot and nine inches. Most of this long shoal was thickly covered with eel grass, so that, but for the great width of the river, the flow of the water would have bee nearly stopped.

About thirteen and five-eighths miles from the place of beginning, is Howland's island bridge, at which there is a shoal about 300 feet long, the shallowest water being only about five and a half feet in depth, but twenty feet deep above and below.

Fifteen miles from the place of beginning is Duval point. Jus above which there is a shoal about a thousand feet long on which the water is 8.60 feet deep. At Duval point is a shoal about 300 feet long, on which the water is nine feet deep.

Musquito point is from the place of beginning fifteen and three-fourths miles, where the water was but three and a half feet in depth; as above stated, here is but what was recently the lower end of the lake. The channel is not only shallow, but narrow, being only 400 feet in width; nothing can be effectually done towards reclaiming the marshes without cutting away this barrier so as to give a free outlet to the water. The length of this reef is 2,000 feet, with deep water above and below; the fall in the surface was 49-100 of a foot. About one mile lower down stream is a bar, on which there is a bridge; the length of the bar is about 300 feet, and the depth of the water seven and a half feet

About nineteen miles from the place of beginning is Hickory island reef, where the water, in one place, was only three feet in depth, the bar being about 800 long and of soft mud. The fall at this reef is 46-100 of a foot.

At Weedsport bridge there is a short bar on which the water was five and a half feet deep; the mud is very soft, as was shown by the action of a dredging machine at work there this season. The fall is about one and a half inches.

About a mile above Bonta bridge and twenty-two and three-fourths miles from the place of beginning is a small bar on which water was seven feet deep.

Bonta bridge reef has six feet water in its shallowest place, and is about 500 feet long. There is about 30-100 of a foot fall at this place; the bottom soft.

Just below the mouth of the Skaneateles creek there is a short bar on which the water was seven feet deep. This was the last bar found above Jack's reefs, where the water was less than ten feet in depth; in one place, near the float bridge, the water was forty-three feet deep.

The State, many years ago, caused a canal to be cut across a bend in the river, below Cross lake, connecting the pond made by the Baldwinsville dam with the waters of the river when they were on a level with Cross lake, and where the water was twenty feet deep, and not less than that in the shallowest place between that point and the lake. In the part of the river thus cut off is Jack's reefs. The water falls in this canal five and a quarter feet. This canal is 4,200 feet long, and is, at the surface of the water, of an average width of about forty feet, and is of an average depth of about twenty-three feet, and was cut through a soft rock, known as the *green shale*. The water varies in depth from 8.80 feet to 2½ feet; about midway of the length of the canal the bottom is two-tenths of a foot higher than the surface of the water in the pond below the reefs.

It is apparent that though the water runs very rapidly through the lower half of the length of this canal, that but a very small part of the water of this great river can go through it. It appears strange that the planners of this canal did not dig it deeper and make the bottom more level. For five hundred feet of the upper end the water is more than eight feet deep. In high water large quantities will of course go through but in low water very little.

The shale that was taken from the cut was deposited by cran in large mounds on both its sides, and to widen it would requir the removal of this earth on one side, that is to say, one-half th contents of the canal must be moved out of the way before th natural surface of the earth would be reached. This canal ca be, and should be deepened, but the cost of *widening* it would b too great to justify its being done. It should be deepened s that the bottom would be six feet below the top of the water i the pond below the reefs, and rising only one foot in the whol length of the canal. Calculations have been made from carefu measurement to determine the quantity of material that it would be necessary to move to so deepen this canal, leaving the bottom twenty feet wide, and it has been found to be 15,644 cubic yards which I estimate to be worth sixty cents a yard, including the cost of dams across the ends of the canal and pumping; this would amount to $9,386. Such an improvement of the canal would, the river remaining at its present height, enable more water to pass than has at any time run in the river since the month of August last. Having thus deepened the artificial channel, a dam can be made across the bed of the river above the reefs and below the upper end of the canal, and thus the whole bed of the river may be freed from water except the small part of it that will require to be excavated below the level of the lower pond. To free this part of the river bed from water, a dam must be made across it just above the lower end of the canal and the water pumped out. I propose, then, to make a cut in the bed of the river one hundred feet wide on the bottom, and beginning six feet below the surface of the lower pond, carrying it up to the deep water above the reefs with one foot rise; the dams being then taken away, the water will run through both these cuts upon the bottom that will be at their ends on like levels. The reduction that would then take place in the surface of the water above the reefs would of course depend upon the quantity of water that may run in the river any given time.

Until after the frosts had in part destroyed the weeds in the river, it was not practicable to gauge the stream with accuracy. On the 12th day of November, it was found at Musquito point there were 1,397 cubic feet running per second. The water was then lower than it had been for many years; and calculations were made of the quantity that flowed in the middle of August, as indicated by the marks then made for the surface, and it was found to be 1,947 feet without deducting anything for the weeds that at that time somewhat obstructed the flow of water. My calculations are based upon carrying 2,000 feet per second, four feet below the surface, as it was on the first of October last. The earth taken from the bed of the river, should be carried beyond the present channel, so as to be out of the way of the freshets that might raise the water up to the present bottom. To make this cut in the bed of the river, it will be necessary to move 54,743 cubic yards of mud and gravel. This I estimate to be worth fifteen cents a yard; under this earth lies the green shale, of which there must be taken out 165,106 cubic yards, which I estimate at 30 cents per yard.

The cost of coffer dams and pumping may be put at $5,000, and the total cost of lowering Jack's reefs, as I propose, will be $72,129. An estimate has been made for widening the present ditch so as to carry the same amount of water as I have above proposed, and it is found that it will be necessary to remove 381,888 cubic yards, in which view of the depth of cutting should be put at forty cents, and would cost $152,755. In one case it is necessary to remove earth to the average depth of 18 feet above top water mark; while in the other the excavation would be commenced three feet *below* the surface of the water; and the quarter length of the cut in the river (10,800 feet) would not equal in cost one-half of the shorter but deep cut.

This plan, except in freshets, would reduce the surface of the Cross lake four feet; and no more excavation would be required below the bar at the Skaneateles, to cut a channel at Skaneateles bar 200 feet wide, and so deep that there will be four feet of water in it after the river is reduced four feet; or in other words, eight feet deep, as the water was when measured, would require 740 cubic yards, which, at ten cents, would amount to seventy-four dollars.

At Bonta's bridge a like cut would be required, 2,222 yards, at ten cents, would amount to	$222 00
At the bar above the bridge a like cut would be required, 3,700 yards, which, at the same price, would amount to	370 00
The bar at Weedsport bridge, for a like cut, would require 2,220, at ten cents, would amount to	222 00
At Hickory island a like cut would require 38,516 yards, at ten cents, would amount to	3,851 00

These shoals are of such material that it is quite probable that, by the aid of the current that would be given by having four feet additional fall, a large proportion would go away with the water if merely loosened up by a dredging machine. The mud taken up at Weedsport bridge this fall, by the dredging machine, was so soft and saturated with water that it appeared hardly possible for it to remain under the action of such a current as would be felt there when the water below the bar was reduced four feet. Nothing would be required to be done at the bridge about a mile below Musquito point.

The bar at Musquito point is, as has been said, hard gravel; but it is believed that it can be moved by an underwater excavator, some work having been done there by such a machine many years ago. I propose to cut this bar down six and a half feet at its highest point, and thereby make a bottom ten feet below the surface of the water, as it was when measured in October. This cut to be 200 feet wide and 2,000 feet long on the bottom, requiring 66,889 yards to be taken out, which I estimate at thirty cents per yard, amounting to the sum of $20,066.

Thus, I estimate the total cost of reducing the water four feet at Musquito point at $96,933.

The reason why I propose to cut so deep at Musquito point is, that the natural bed of the river is so narrow that the high water is here retained more than at any other point on the river; and unless free vent is given to it, reclaiming the marshes will be out of the question.

If the plan I propose should be adopted, the freshets that now cover the marshes would pass off rapidly, and would never rise so high, by two or three feet, as heretofore.

At Howland's island bridge it would be necessary to excavate 3,500 yards, which, being more compact than the mud bar, I put at twelve cents a yard, which amounts to $420.

Campbell's island and Bluff point shoals are together about three and a half miles long. The proper way of moving this mud is to reduce the water below as proposed, and, by the aid of a steam dredging machine, let the water carry it into the deep holes that abound in the river. It is very difficult to say what it will cost to move this mud by the yard, having the assistance of the current; but without its aid, it would probably cost fifteen cents, as indicated by the work done in excavating for the railroad bridge. But experienced men with whom I have advised on this point think, as I do, that adding the four feet fall to the one and three-quarters now in the shoal, that little more will be required than to keep a dredging machine working out the channel to float away the soft mud; but to be on the safe side, I will call it ten cents.*

A cut of 210 feet, average width, would require 408,527 cubic yards, which, at ten cents, would cost $40,852, which makes $138,206, to the lower end of Kipp's island; and in this calculation, for the purpose of securing sufficient velocity of the water to prevent the cut filling up with mud, I propose to loose one foot-fall above the Musquito point, and reduce the water at Kipp's island only three feet.

If no account is made for increased expense in deepening the channel in consequence of the enlargement of the Erie canal, no work will be required on the west side of Kipp's island, unless it may be found necessary at the short bar heretofore mentioned as having been caused by the sinking of a raft; but it is not probable that anything more would be required at that place than to allow the increased current to act.

The Canandaigua would in this way be lowered three feet, and all the wet lands on its borders would be made dry for many miles.

At the upper end of Kipp's island there is a bar that should be cut down three feet, and two hundred feet wide. This would require the moving of 64,814 yards, which, at ten cents, would amount to $6,481.

Next above is the Free bridge reef, which, as has been said, is made of gravel. If this reef and two slight bars above were cut down, and also as has been proposed, at all points below, it would have the effect of lowering Cayuga lake from two to three feet. If the hard material of Free bridge reef were to be taken away, it is probable that the two bars above would be carried away by the water. It is my opinion that nothing should be done at this place until after the deepening below had been done, and its effect upon Cayuga lake determined.

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* "It appears from observation, that a velocity of three inches per second at the bottom, will just begin to work upon fine clay fit for pottery, and however firm and compact it may be, it will tear it up. Yet no beds are more stable than clay when the velocities do not exceed this, for the water soon takes away the impalpable particles of the superficial clay, leaving the particles of sand sticking by their lower half in the rest of the clay, which they now protect, making a very permanent bottom, if the stream does not bring down gravel or coarse sand, which will rub off this very thin crust, and allow another layer to be worn off. A velocity of six inches per second will lift fine sand; eight inches will lift sand as coarse as linseed; twelve inches will sweep along fine gravel; twenty-four inches will roll along round pebbles an inch in diameter; and it requires three feet per second at the bottom to sweep along shivered angular stones of the size of an egg."—*Ree's Cyclopedia; article, Water.*

It is probable that without moving anything from the bed of the river at Free bridge, the lake would fall one foot. The freshets that have heretofore affected it would run off down the river, and the surface of the lake would be of a much more uniform height.

I have stated my plan in detail, and the whole cost I estimate at $144,687. If this plan should be adopted, the great object of making these pestilential marshes productive and healthy would be accomplished. Any plan that proposes less than this, appears to me to be useless.

5. I have been requested by the Commissioners, through you, to state, as far as practicable to do so, by the best means in my power, without waiting for the rise of the waters, the difference in the number of cubic feet of water passing the Seneca river at Musquito point and at Baldwinsville, in high and low water, and the amount of water commonly running to waste during the autumn months, the winter months, and the spring months.

I have already stated that in November there were 1,397 cubic feet passing Musquito point per second, and that my calculations suppose 2,000 cubic feet per second at the usual summer flow at Jack's reef, after the freshets of spring have subsided. From the high-water marks at Musquito point and Jack's reefs, calculations were made which gave 9,156 cubic feet per second as the greatest quantity of water that passed the place first mentioned in freshets.

Calculations were made, based upon the number of square miles that were drained by this river, and from the rain gauges kept at the academies on and near this territory, of the quantity of water that falls on it in a year, and having made such allowance as appeared proper for the evaporation, the average flow per second for the whole year at Jack's reefs is 2,651 cubic feet per second.

None of this water can be said to run to waste, except the spring freshets. The character of the country drained by this river is such that there can be no very high or very low water, and the flow is more uniform than in any river, with the exception of the St. Lawrence, with which I am acquainted. Over ten per cent. of the surface drained is made up of the Crooked, Seneca, Canandaigua, Cayuga, Owasco, Skaneateles and Cross lakes, and of water surface in the marshes, all acting as reservoirs and regulators of the flowing of the river.

The water in these lakes is very pure, and their shores are generally high and healthy, and the marshes are surrounded by the most fertile agricultural country in the State; but in these marshes the water is contaminated, and becomes so saturated with pestilence as to have conferred a very unenviable reputation for fevers along the course of the river; not only is this true of the immediate borders of this stream, but for many miles the air is injuriously affected.

These marshes have been deposited by running water, until, by their rise and the receding of the water, their surface has been exposed to the air, when there commenced a most luxuriant vegetation, which, dying every autumn, elevates the soil upon which it grows.

The bottom of the river is a mass of broken and decaying shells, from particles too small to be seen by the naked eye to some inches in length. These fragments are bedded in a mud that may be said to be fluid, so soft that a pole can be forced into it, by the power of a single man, many feet deep.

6. I am requested to estimate the quantity, character and cost of the excavation necessary to reduce the surface of the river in *low water* one foot, two feet, three feet, four feet, five feet and six feet. To determine these questions with anything like accuracy, would involve a vast amount of measuring and calculating, for which sufficient time has not been given; but perhaps enough has been done to meet the objects that the Commissioners had in view. To reduce the surface in low water one foot, it would be necessary to move 20,222 yards at Musquito point, which, at 30 cents per yard, would be $6,066; take from Bluff point shoal 111,416 yards, at 10 cents, would cost $11,161; at Hickory island 2,222 yards should be moved, which, at 10 cents, gives $222; in all, $17,440.

To reduce the surface at low water two feet at Musquito point, excavate 35,777 yards, at 30 cents, gives $10,733; at Bluff point and Hickory island 264,487 yards, at 10 cents, amounts to $26,448; at Jack's reefs it would probably be sufficient to cut down the bottom of the canal as proposed, this would cost $9,386; in all $46,557. These calculations are made to answer the interrogations of the Commissioners and *are for low water only*, and to carry 1,400 cubic feet of water per second; in high water such excavations would produce but little effect. The questions in relation to three and four feet have probably been sufficiently answered. To reduce the water at Montezuma five or six feet would involve the loss of most of the declivity in the stream, as Montezuma is but eight and a half feet above the water in the Baldwinsville pond; and if five feet be deducted, it leaves only three and a half feet fall to be distributed over the whole distance, giving about $\frac{14}{100}$ of a foot to the mile; to reduce the surface six feet, would leave only about a tenth of a foot per mile fall.

Cuts wide enough and deep enough to carry even the least water of summer down so slight a declivity would cost very large sums, as comparatively little mud could be calculated upon as moving under the action of the water. The surface of the water could not probably be kept at these depths if once lowered to them, as in a current so slow the channel would fill up.

7. As to the effect of reducing the water in the river upon the navigable waters connected therewith.

The Erie canal now crosses the river in its waters, but the enlarged canal is in the course of construction, and the aqueduct which is to carry the canal over the river will soon be finished.

The Seneca canal is locked down into the river on both sides, but will probably be carried over it in preference to rebuilding the present dilapidated wooden locks. The Cayuga lake canal is locked into the lake at Cayuga bridge. The present lock is old, of wood, and must soon be rebuilt, and if the lake is lowered it will be necessary to place the foundation to suit the change. Cayuga lake is shallow at its north end, and the wharves at Cayuga bridge, and all the way up the shore as far as Springport, have but enough water to float loaded boats; but these wharves can be extended into deep water with little cost, except at Springport; there any considerable reduction of the lake's surface would make it necessary to dredge out the harbor.

The low lands at the head of the lake would be much benefited by a reduction of even one foot. The whole lake shore would be improved by so deepening the river as to cause the freshets to go at once down it, and thus keep them from raising the lake.

Having, as far as I could, answered the interrogatories put to me by the Commissioners, through you, and having expressed my own views as to the proper plan to be adopted, it only remains for me to add that I herewith transmit to you a map of the river, from the Cayuga lake to Baldwinsville, made from actual survey. This is the first survey ever made of the river from the lower end of Howland's island to Jack's reefs, so far as I can learn.

The measurements on the surface of the water were made with a line 1,500 feet long, having buoys on it to keep it on the top of the water, and to mark distances. This was drawn on the water by one boat while another was at the other end to hold the line fast to a stake, while a third boat took the soundings and the courses of the river. In order to use the compass it was necessary to push a pole into the mud, and use an arm, made for that purpose, that moved up or down the pole to the proper place, and was then wedged fast. These water measurements were tested at various points upon the monuments set up by a surveyor, who run a line upon the land. This mode of taking the courses of the river was necessary, as it is only at points, sometimes miles apart, that it was practicable to get to the river's edge through the marsh.

So much of the map as shows the country above Howland's island, on the west side of the river, was copied from a map made from a survey of C. A. Olmsted, the present division engineer.

For the purpose of aiding in future observations on the rise and fall of Cayuga lake, benches were made near Cayuga bridge. These benches are cut in the face of the rock on the east shore; one of them is 222 feet southerly from the centre of Cayuga bridge; another is 182 feet southerly from the same place, and a third is 157 feet northerly from the same place. All these benches are on the same level, and are $8\frac{137}{1000}$ feet above the surface of the lake, as it was on the first day of October last.

All of which is respectfully submitted by

Your obedient servant,
GEORGE GEDDES,
Civil Engineer.

ALBANY, *December* 31, 1851.

STATE ENGINEER AND SURVEYOR'S OFFICE,
ALBANY, *January* 8, 1852.

I certify that the within is a true copy of an original report now on file in this office.

WILLIAM J. McALPINE,
State Engineer and Surveyor.

Extra allowances by Canal Board, from 1826 *to March* 1, 1851.

On contracts, section 3, page 363, Laws 1826	$860,041 49
Additional allowances on appeals from decisions of Canal Appraisers, under act chapter 368, Laws 1829	37,555 63
Additional allowances, miscellaneous, other than appeals, under various acts	24,319 19
For breach of contracts from suspensions, 1842, under act chapter 219, Laws 1843, comprising the whole	514,484 19
Penalties for breach of canal laws remitted	2,114 14
Total, exclusive of canal officers for extra services	$1,438,514 64

PROGRESS OF THE CANALS IN 1852.

Total receipts and payments on account of Erie Enlargement, Black River and Genesee Valley Canals, from their commencement to January 21, 1853, *as given in the report of the Commissoners of the Canal Fund.*

Received:	
From avails of loans	$15,348,230 70
From Erie and Champlain canal tolls	23,036,259 10
From Black River and Genesee Valley canal tolls,	266,095 20
From interest on deposits	299,076 49
From miscellaneous sources	131,266 82
Total receipts	$39,080,928 31
Paid:	
Principal of loans	$3,956,978 33
Interest on same,	9,477,646 07
Interest on revenue certificates	21,540 51
Surplus to Eric and Champlain canals	24,294 48
Canal Commissioners, for construction	24,845,154 27
Superintendents of repairs	346,076 09
Premiums on purchase and investment of stocks,	3,829 25
Collectors	20,357 92
Miscellaneous	385,041 39
Total paid	$39,080,928 31

Tolls, trade and tonnage.

The following interesting table and statements on this subject, are taken from Auditor Newell's report for 1852:

YEAR.	Tons average cargo of boat.	Days' time between Buffalo & Albany.	Freight on a barrel of flour.	Lockages at Alexander's lock.	Tons deliv'd at tide waters from Erie canal.
1841	41	9	71 cents.	30,320	532,520
1844	49	7½	60 do	28,219	799,816
1847	67	10¼	77 do	43,957	1,431,252
1848	71	9	58 do	34,911	1,184,337
1849	68	8¾	56 do	36,918	1,266,724
1850	76	9	58 do	38,444	1,554,675
1851	78	8¼	49 do	40,396	1,508,677
1852	80	9	53 do	41,572	1,644,699

The above statement gives a comparison of the last year's business with that of 1841; and shows that while the boat has doubled its capacity, the time necessary to make the passage from Buffalo to Albany is the same, at a reduction in transportation of 18 cents per barrel of flour; and that while the lockages have increased 33 per cent., the tons arriving have increased 200 per cent.

Cost of Transportation for the past sixteen years.

Whole cost of transportation on 34,781,919 tons	$78,897,554
Deducting carriers' charges	39,029,692
Leaves	$39,867,862

As a charge or tax upon commerce, beyond the cost of support and maintenance, equal to $1,800,000 per annum for 16 years, and applicable to the payment of interest and principal of the canal debt, and completion of unfinished works.

In 1840, the average charge upon freight, going and returning, was 140 per cent. more than in 1852.

To counteract the effect of repealed railroad tolls, a reduction of 40 per cent. was made in 1852, on merchandise going from tide-water, or from 8 and 5 to 4 mills per ton per mile; and on iron 13.20 per cent., or from 2½ to 1½ mills.

Comparison between the Erie enlargement and railroads, capacity, &c. Taken from Wm. J. McAlpine's report on canals for 1852.

	ERIE CANAL.		Double track railroad, Albany to Buffalo.
	Old canal.	Enlargement.	
Capacity, transport of freight, tons	1,500,000	7,000,000	1,500,000
Cost per mile for construction	$19,679	$80,736	$60,000
Cost per mile for repairs	$900	$700	$600
Cost per mile per ton for movement	2¼ mills.	1¾ mills.	6 mills.
Ratio between cargo and whole weight	1 to 1.43	1 to 1.20	1 to 1.70

Cost of Transportation per ton, per mile, in 1852.

Ocean—long voyage 1½ mills, short voyage 2 to 6 mills.

Lakes—long voyage, 2 mills, short voyage, 3 to 4 mills.

Rivers—Hudson, 2½ mills, St. Lawrence and Mississippi 3, and tributaries, 5 to 10 mills.

Canals—Erie enlargement, 4 mills; others equal in size but shorter, 5 to 6 mills; ordinary size 5 mills; ordinary size with great lockage, 6 to 8 mills.

Railroads—Transporting coal, 6 to 10 mills; not for coal favorable lines and grades, 12½, and for steep grades, &c., 15 to 20 mills.

(The above deductions were made by Wm. J. McAlpine, from extensive tables furnished.)

The following statement was carefully prepared by R. F. Lord, chief engineer of the Delaware and Hudson canal, previous to and as a basis for its enlargement.

Cost of transportation.

Old canal before enlargement, 50 tons 108 miles, $1 per ton, or 1 cent per ton per mile.

For 100 tons 108 miles, 65 cents per ton, or 5 6-10 mills per ton per mile.

For 116 tons 108 miles, 58 cents per ton, or 5 4-10 mills per ton per mile.

For 136 tons 108 miles, 50 cents per ton, or 4 6-10 mills per ton per mile.

The enlargement was made for the last size of boat at a cost of 2½ millions, and the reduction in cost of transportation has been realized.

Estimated cost to complete the canals, by Wm. J. McAlpine, 1852.

CANALS.	TO COMPLETE.	
	On plans and locations, 1851.	On plans and locations, 1852.
Enlargement Erie canal, at contract prices.	$9,648,348 49	$9,577,654 94
Black River canal, do	262,630 18	203,115 00
Oswego canal, do	491,676 00	491,676 00
Genesee Valley canal, do	387,466 74	387,466 74
Total	$10,790,121 41	$10,659,912 68

PROGRESS OF THE CANALS IN 1853.

The law for the enlargement of the Erie and completion of the Black River and Genesee Valley canals, and enlargement of the Oswego, passed April 14, 1852, and appropriated $11,585,955, but was repealed by act passed June 29, 1853.

The act, passed July 20, 1853, for the completion of the canals, appropriated—

For the enlargement, as approved by the Constitution.	$390,000
do completion Black River canal	75,000
do do Genesee Valley canal	100,000
do improvement Oswego canal	50,000
do enlarging locks, Cayuga and Seneca canal	20,000
do do do Champlain do	10,000
do upper level, Crooked Lake do	5,000

Tolls, Trade, and Tonnage.

The average rate of toll in 1853 was 4.6 mills per ton per mile, for the whole tonnage, 2.4 mills for the products of the forest, 4.1 for animals, 5.5 for vegetable food, 5.2 for manufactures, except salt, 6.2 for merchandise, and 2.6 mills per ton per mile for all unenumerated articles.

TABLE *of Charges.—Actual cost 2-3 of charges.*

	To Liverpool.			To Havre.			To Havana.			To Rio Janeiro.		
	Miles.	Per ton.		Miles.	Per ton.		Miles.	Per ton.		Miles.	Per ton.	
		Voyage.	Per mile.		Voyage.	Per mile.		Voyage.	Per mile.		Voyage.	Per mile.
			Mills.			Mills.			Mills.			Mills.
From Quebec............	2,910	$11 00	3.75	3,130	....	....	1,960	....	....	6,010	....	....
Boston	3,020	5 25	1.74	3,000	$5 00	1.67	1,480	$4 00	2.70	5,310	$4 00	0.75
New York.........	3,150	5 00	1.60	3,318	4 50	1.35	1,250	3 00	2.40	5,240	4 00	0.76
Philadelphia.......	3,295	5 50	1.70	3,385	5 00	1.47	1,220	4 00	3.27	5,000	5 00	1.00
Baltimore	3,530	5 75	1.60	3,620	6 00	1.65	1,215	5 00	4.11	5,000	6 00	1.20
Richmond	3,395	6 00	1.70	3,485	6 00	1.72	1,170	5 50	4.70	5,000	6 00	1.20
New Orleans.......	4,755	7 50	1.60	4,845	7 50	1.54	595	4 00	6.72	6,555	7 00	1.06

The rates of freight specified may be considered (they are as far as ascertained) a fair average freight of vessel's capacity for the past three years. To Rio Janeiro the freights are low proportionately, as the return freights are generally good.

By applying the rates given in 1852 to the transportation of freight between the eastern end of Lake Erie and the Atlantic ports, we arrive at the cost for the several routes, as follows:

1st.	By Welland canal, Lake Ontario, and Oswego and Erie canals enlarged, and Hudson river*	$2 43
2d.	Erie canal enlarged and Hudson river, to New York	2 52
3d.	the Canadian canals and the St. Lawrence, to Quebec	2 58
4th.	the Welland canal, Lake Ontario, the Oswego and Erie canals, and the Hudson river, to New York	2 94
5th.	the Erie canal and the Hudson, to New York	3 16
6th.	Welland canal, Lake Ontario, St. Lawrence, proposed Caughnawaga canal, Champlain lake and canal, and the Hudson, to New York	3 43
7th.	the New York Central railroad and the Hudson river	6 19
8th.	the Welland canal, Lake Ontario, the Ogdensburgh and Massachusetts railroads	8 02
9th.	the New York and Erie railroad, to New York	8 43

Analysis of the present business of the New York Canals.

Items.	Per centage of the whole—1852.		Per centage of the whole—1853.	
	Tonnage.	Tolls.	Tonnage.	Tolls.
Of all the canals	100	100	100	100
Of the Erie	.55	.89	.52	.75
Champlain	.13	.04	.14	.03
Oswego	.18	.03	.18	.03
Cayuga and Seneca	.02	.01	.01	.02
Chemung	.05	.00	.06	.04
Crooked Lake	.01	.00	.01	.01
Chenango	.01	.01	.02	.00
Genesee Valley	.03	.01	.04	.02
Black River	.01	.00	.01	.00
Oneida Lake	.01	.00	.01	.00
Of all the canals	100	100	100	100

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* To the cost of the movement, in each of the above cases, has been added a price per ton, which would, on a movement of two millions of tons per annum, pay the annual cost of maintenance and interest at 7 per cent. on the cost of the artificial works through which the several routes pass. In the case of the enlargement of the Erie canal, the movement is taken at four millions of tons, in consequence of its greater capacity.

Items.	Per centage, 1852. Tonnage.	Tolls.	Per centage. 1 Tonnage.	Tu
Arriving at tide water	.58	--	.59	.
Leaving do	.13	--	.14	-
Shipped elsewhere	.29	--	.27	.
Of all the canals	100	100	.00	10
Shipped at Hudson river	--	--	--	..
Lake Erie	.19	--	.19	..
Oswego	.09	--	.12	.1
Whitehall	.03	--	·08	.0
on Chemung canal	--	--	.06	.0

Of the length of navigation by lakes, rivers, and canals, west of, an in the State of New York.

	Area square miles.	Miles wide.	Mil lon
Ontario	6,300	40	18
Erie	9,600	80	27
Detroit river	-----	--	9
St. Clair	360	25	2
St. Clair river	-----	--	3
Huron	20,400	100	27
Georgian bay			
Mackinaw straits	-----	--	...
Michigan	22,400	83	34
Green bay	2,000	--	...
St. Mary's river	-----	--	46
Superior	32,000	135	4
Total length of lake navigation			1,60

The whole length of the lake coast is 5,000 miles, of which 3,000 is in the United States.

	Miles
Erie	364
Chenango	97
Black river—Rome to High falls (completed 33 miles)	47
do improvement to Carthage	4
Oneida lake	6
Oneida river improvement	20
Oswego	3
Cayuga and Seneca	23
Crooked lake	8
Chemung canal and feeder	23
do feeder	16
Genesee Valley, (completed 88 miles)	11

	Miles.
Champlain canal	64
Glens Falls feeder	15
Length of State canals	877
Delaware and Hudson canal	108
Junction canal to the Chemung	12
Total length of canals	997

PROGRESS OF THE CANALS IN 1854.

Act chap. 329, April 15th, 1854, authorized: the enlargement of the prism of the Cayuga and Seneca canal, (the enlargement of the locks having been authorized of wood by act chap. 453, Laws of 1836, and composite by chap. 348, Laws of 1847;) enlargement of the prism of the Oswego canal, (the locks having been authorized to be enlarged by act chap. 262, Laws of 1847;) the completion of the enlargement of the Erie, Black River, and Genesee Valley canals; enlarge-ment of Champlain canal locks; establishing a general system for letting contracts; giving bonds, and reserving 15 per cent. from estimates, &c.; and appropriating for the canals $2,250,000.

This act also created the Contracting Board, composed of the State Engineer and Surveyor and the three Canal Commissioners, (powers extended by act passed March 14th, 1857, to take effect Jan. 1st, 1858, adding the Auditor, and giving the Board the appointment and control of the Engineer Department.

SUMMARY

Of work put under contract on the several canals in this State, in pursuance to act, chap. 329, Laws of 1854, also showing the per cent. less than the engineer's estimate at which the same was awarded.

ALBANY, *January* 22, 1855.

NAME OF CANAL.	Aggregate of bid.	Engineer's esti'e.	Difference.	Per cent
Erie, Eastern Division	$729,262 75	$965,187 24	$235,924 49	24.433
Erie, Middle Division	932,775 13	1,142,207 73	209,432 60	18.336
Erie, Western Division	2,860,404 50	3,815,666 52	955,262 02	25.035
Total Erie	$4,522,442 48	$5,923,061 49	$1,400,619 11	23.647
Champlain	146,651 58	169,905 54	23,253 96	13.686
Black River	131,910 60	144,030 00	12,119 40	8.414
Oswego	666,521 20	746,341 16	79,819 96	10.695
Cayuga and Seneca	338,153 45	421,923 82	83,770 37	19.854
Genesee Valley	104,075 00	123,350 00	19,275 00	15.626
Total	$5,909,754 21	$7,528,612 01	$1,618,857 80	21.509

Letting out of Repairs by Contract.

The system of repairs by superintendents, under the supervision and personal inspection of the Canal Commissioners, was adopted in 1826 on the completion of the Erie and Champlain canals, and pursued without interruption 28 years, until 1854, when the abuses became so open and palpable as to attract the attention of the Legislature, and laws were passed in 1854 and 1855 authorizing the letting of the repairs of the completed superintendents' sections by contract. In 1854, when the first of these laws was enacted, the cost of repairs had reached the enormous sum of $1,237,866.20, or $1,465 per mile. Under the authority conferred by the above acts, the Canal Commissioners, previous to January 1st, 1856, put under contract for repairs superintendents' sections Nos. 1 and 8, Erie canal; sections 1, 2, and 3, Champlain canal; sections 1 and 2, Black River canal; sections 1, 2, and 3, Chenango canal; sections 1 and 2, Genesee Valley canal; the Chemung, Crooked Lake, and Oneida Lake canals.

Charles Cook and Wm. J. McAlpine made a proposition to take the repairs of the canals by contract for $700,000 a year, as stated by Mr. Field in a report from the committee on canals, when introducing the bill for letting the canal repairs by contract.

Cost of completing the canal; by Jno. T. Clark, in 1854, *and Wm. McAlpine, in* 1852.

CANALS.	By Jno. S. Clark, Jan. 1855.	By W.J. McAlpine, Jan. 1853.
Erie canal enlargement	$9,136,842 86	$11,168,772 94
Oswego canal enlargement, locks and channel	1,218,763 22	1,462,833 00
Cayuga and Seneca canal, do	590,908 13	632,000 00
Black River canal, and improvement to river	344,970 65	521,545 36
Genesee Valley canal	245,086 00	486,466 74
Enlargement of locks on Champlain canal	264,291 49	264,291 49
Add for engineering, land damages and building	1,500,000 00	$14,535,509 53
Deduct amount done from Jan. 1853, to Jan. 1855		2,069,962 26
Totals	$13,300,862 35	$12,465,947 27

The Erie canal has been shortened by enlargement 13.06 miles, as follows: on the Eastern division, 1.26 miles; Middle division, 4.17 miles; and Western division, 7.63 miles.

Chemung Canal.

In answer to a Senate resolution, Jan. 9th, 1855, the State Engineer stated that the present locks on this canal had been in use 14 years, and that one-third of the whole should be rebuilt before the spring of 1856; that the estimated cost of rebuilding the same on the old foundations of wood would be $5,500 each, that composite locks would cost $7,500, and enlarged composite (same as on the Cayuga and Seneca canal) would each average from $18,000 to $20,000.

Acts passed during the year.

To amend the Constitution for the completion of the canals, chap. 5, Jan. 20; to improve the Erie, Oswego, Cayuga and Seneca canals, for boats 3½ feet draught, chap. 16, Feb. 15; to pay for materials delivered and used by superintendents, chap. 202, April 13; to connect the Junction canal with the Chemung canal, chap. 227, April 15; prescribing regulations and management of canals, chap. 331, April 15; Baldwinsville canal placed under control Canal Board, chap. 333, April 15; law for completion of canals passed July 10th, 1851, repealed, chap. 338, April 17.

Reduction rates of tolls.

ARTICLES REDUCED.	Amount of reduction. from	to	Toll on articles in 1851 reduced in 1852.	Toll on same articles at rates of '52.	Difference in toll collected on articles reduced.	Per cent of reduction on articles reduced.
	mills.	mills.				
Merchandise	8	4	$454,378	$227,189	$227,189	50
do	5	4	257,049	205,639	51,410	20
Railroad iron	2.5	1.5	120,614	72,369	48,245	40
Down freight	......	......	489,017	385,250	112,767	22.64
			$1,330,058	$890,447	$439,611	33

Between the years 1851 and 1852 the per cent. of reduction on all merchandise reduced from 8 and 5 mills to 4 mills was	39.16
Per cent. of reduction in total tolls ($3,329,777) for season of navigation	13.20
Per cent. of reduction in tolls on down freight	4.515

PROGRESS OF THE CANALS IN 1855.

Completion of the Canals: Statements from the Report of John T. Clark, State Engineer and Surveyor.

Estimated cost of all the canals from and after the 31st day of December, 1853, the constitutional amendment having been sanctioned by the people in February, 1854.

Work done in 1854		$873,713 84
do in 1855		3,524,898 03
Expenditures in the Engineer Department in 1854		144,136 43
do do do 1855		211,982 72
Required to complete the Erie canal enlargement at contract prices, from and after the 31st of Dec., 1855	$4,823,727 98	
do Oswego canal	837,311 59	
do Cayuga and Seneca canal	321,133 96	
do Black River canal	222,359 03	
do Genesee Valley canal	96,989 30	
do Locks on Champlain canal	132,185 16	
	$6,433,707 02	
Add for contingencies, 10 per cent.	643,370 70	
	$7,077,077 72	
Engin'g, land damages, &c., (est'd)	1,300,000 00	
		8,377,077 72
Estimated cost of all the canals, from the 31st day of December, 1853		$13,131,808 74

The following summary shows the estimated cost of each canal from and after the 31st December, 1855, with 10 per cent. added for contingencies:

Erie canal	$5,306,100 77
Oswego canal	921,042 75
Cayuga and Seneca canal	353,247 35
Black River canal	244,594 93
Genesee Valley canal	106,688 23
Locks of the Champlain canal	145,403 67
	$7,077,077 70
Add for engineering, land damages, removal of buildings, and miscellaneous expenses	1,300,000 00
	$8,377,077 70

Statement showing the present estimated cost of completing the New York State Canals, from January 1st, 1854; *the amount each canal would be entitled to receive on a pro-rata division, in proportion to said cost, of the* $9,000,000; *the amount appropriated to each in* 1854 *and* 1855; *and the amount each canal would be entitled to receive on a pro-rata division, as aforesaid, of the appropriation of the remainder of the nine millions, at the present session of the Legislature, at contract prices, and exclusive of land damages and engineering.*

	Present estimated cost of completing, from January 1, 1854.	Amount each canal would be entitled to, to make up the $9,000,000.	Amount of appropriations made in the years 1854 and 1855.	Amount which each canal is entitled to receive from appropriations to be made in the year 1856.
Enlargement of the Erie canal	$8,540,775 09	$6,672,928 50	$5,547,000 00	$1,125,928 50
do of the Oswego canal	1,468,053 94	1,146,994 15	527,000 00	619,994 15
do of the Cayuga and Seneca canal	543,733 00	424,819 92	301,000 00	123,819 92
Completion of the Black River canal	395,391 01	308,919 97	147,000 00	161,919 97
Completion of the Genesee Valley canal	299,158 57	233,733 32	163,000 00	70,733 32
Enlargement of locks of Champlain canal	272,115 04	212,604 14	75,000 00	137,604 14
Totals	$11,519,226 65	$9,000,000 00	$6,760,000 00	$2,240,000 00

All of which is respectfully submitted.

HENRY FITZHUGH, *Canal Commissioner.*
S. SEYMOUR, *State Eng. and Surveyor.*

The Letting of Canal Repairs by Contract.

The Legislature, by act, chap. 327, Laws of 1854, authorized the Canal Commissioners, under the direction of the Canal Board, to let by contract to the lowest responsible bidder, not to exceed three superintendents' sections of the enlarged Erie canal.

But two such sections were at that time completed; one of them, section No. 8, extending from the Limestone creek feeder in Manlius to the foot of lock No. 50, four miles west of Syracuse, a distance of eleven (11) miles, was put under contract for five (5) years from the 1st of October, 1854; the other section, No. 1, at Albany, was put under contract last spring, for five years from the 1st of March last.

Last winter the Legislature, by act, chap. 554, authorized the letting by contract of the repairs of any of the completed sections of the canals not already under contract. Under this act the Chenango, Crooked Lake, and Oneida Lake canals, and the Chemung canal and feeder, all on the Middle division, were put under contract in September, for five (5) years from the 1st of October last; the Genesee Valley, in December last, for the same period from the 1st of February next; and the Black River and the Champlain canals for the same period of time from the 1st inst.

PROGRESS OF THE CANALS IN 1856.

Completion of Canals—From Silas Seymour's report for 1856.

The following estimate is now submitted to the Legislature as the most reliable one that can be formed of the total cost (from and after the 31st December, 1853) of the "enlargement of the Erie, the Oswego, the Cayuga and Seneca canals, and the completion of the Black River and Genesee Valley canals, and the enlargement of the locks on the Champlain canal," as provided for in the amendment to the Constitution, adopted on the 14th day of February, 1854:

Work done in 1854	$873,713 84
Engineering do	144,136 43
Land payments do	82,946 44
Work done in 1855	3,524,898 03
Engineering do	211,982 72
Land payments do	92,611 80
Work done in 1856	3,864,014 95

Engineering in 1856	$245,618 48	
Land payments do	134,987 11	
		$9,174,909 80

Estimated cost of work to be done after 31st Dec., 1856.

Erie canal enlargement	$2,936,483 43	
Oswego canal	592,747 05	
Cayuga and Seneca canal	272,038 52	
Black River canal	142,742 60	
Genesee Valley canal	55,600 98	
Locks on Champlain canal	183,746 00	
Estimated cost of engineering	258,902 00	
Estimated land payments required	632,329 62	
		5,075,090 20
Total		$14,250,000 00

The statement of work done and the expenditures in the Engineer's Department, for 1854 and 1855, are taken from the estimates of Mr. Clark, contained in his report for 1855. The land payments for the years 1854 and 1855, are taken from the reports of the Canal Appraisers for those years, and the amount for the year 1856, is the amount of awards for that year, as furnished by the Appraisers, the whole of which has probably not been paid.

Work was partially suspended upon the unfinished canals Oct. 16, 1856, the money provided by the Constitution, and appropriated by the Legislature, being insufficient.

Form of Suspension.

CANAL COMMISSIONERS' OFFICE,
1856.

To —— ——, contractor for the construction of —— for the enlargement of the Erie canal:

In accordance with a proviso in your contract with the State of New York, made and provided, you are hereby notified that appropriations are exhausted on the ——— division of the enlargement of the Erie canal, for the fiscal year ending Sept. 30, 1857.

The new locks, Nos. 32, 34, 39, 40 and 41, were brought into use the past season.

The dams across the Mohawk, at Rome, and at Rocky rift feeder, were completed; the Rome feeder had been the past season, and the Rocky rift feeder would be completed for use in the coming season.

Tolls, Trade and Tonnage.

The comparative tabular statement, No. 48, herewith submitted, is a condensed view of the total tonnage and receipts of toll on all the canals on the different descriptions of property carried, for the period of six years:

	Tons carried.	Tolls received.	Average per ton.
1851	3,582,733	$3,075,992	$85 86
1852	3,863,441	2,866,385	74 19
1853	4,247,853	2,955,697	69 51
1854	4,165,862	2,547,438	61 15
1855	4,022,617	2,610,420	64 89
1856	4,116,082	2,554,215	62 05

The receipts of toll above given are upon the property carried exclusive of the tolls on boats and passengers.

Acts passed during the year:

Appropriating $60,000 for enlargement Champlain canal locks, April 10, 1856; Genesee Valley canal, authorizing survey for extension from Olean to Millgrove pond, (the survey of which was made and reported on January 24, 1857; the north 7.16 miles long, estimated to cost $106,817, and south line, 6½ miles long, $109,072.)

PROGRESS OF THE CANALS IN 1857.

Cost of lateral canals, as given by the Auditor, in answer to Senate resolution, dated April 9, 1858.

CANAL.	A. Cost of original construction.	B. Enlargement, extra repairs, &c.	C. Expense of working canals.	D. Deficiencies included in col'n C, for ordinary repairs.	E. Amounts received from the canals.	F. Contributed from other funds.
Oswego canal	$565,437 35	$1,477,042 74	$1,678,825 03	$526,649 38	$1,776,236 79	$1,945,068 33
Cayuga and Seneca canal	236,804 74	581,960 80	768,209 12	215,273 03	615,214 33	971,760 33
Chemung canal	331,693 57	480,751 04	1,168,260 96	772,073 81	358,342 20	1,622,363 37
Crooked Lake canal	156,776 90	147,269 16	264,505 45	355,272 08	70,694 57	497,856 94
Chenango canal	2,270,605 22	154,763 06	1,833,477 32	1,238,438 27	579,313 93	3,679,531 88
Black River canal	1,068,437 20	1,793,043 39	1,265,021 24	676,134 48	76,095 13	4,050,406 70
Genesee Valley canal	2,002,285 92	3,386,257 04	4,016,440 25	1,385,951 47	618,921 93	8,786,061 28
Oneida Lake canal	50,000 00	....	119,359 28	45,530 85	62,378 43	106,780 85
Baldwinsville canal	16,585 13	....	7,146 26	7,147 63	1,083 76	22,647 63
Total	$6,698,626 03	$8,021,087 23	$11,121,245 11	$5,222,471 00	$4,158,481 07	$21,682,477 31

Cost of original construction as above	$6,698,626 03
Canal Commissioners, for enlargement and extra repairs	8,021,087 23
Total payments by Canal Commissioners	$14,719,713 26
Expense of working canals	11,121,245 11
Gross cost of canals	$25,840,958 38
Deduct amount received from tolls	4,158,481 07
Net cost canals and working same	$21,682,477 31

Statement of the amount of work already done, and estimated cost of completing the works authorized by the Constitution, by Silas Seymour, in report for 1857.

The amount estimated for work done, engineering, land damages, &c., upon the enlargement and other works authorized by the Constitution, from December 31, 1853, to December 31, 1856, was		$9,174,909 80
The amount estimated on the same account during the past year was		2,862,923 07
The estimated amount of work to be done and payments to be made for engineering, land damages, &c., from and after this date, is as follows:		
Erie canal enlargement	$1,743,964 58	
Oswego canal	448,027 37	
Cayuga and Seneca canal	161,677 24	
Black River canal	97,135 00	
Genesee Valley canal	109,212 10	
Locks on the Champlain canal	129,180 00	
Engineering	209,919 00	
Land damages	467,829 62	
Add for contingencies	345,222 22	
		3,712,167 13
		$15,750,000 00

It will be seen by comparing the above estimate with the estimate submitted in the last annual report from this Department, that the present total estimated cost is increased by the sum of $1,500,000 over the estimate of last year.

This increase upon the Eastern division, as reported by Mr. Goodsell, is	$188,573 07
Upon the Middle division, as reported by Mr. Hartwell	233,025 16
Upon the Western division, as reported by Mr. Fay	733,179 55
Total increase, exclusive of contingencies, added to estimate of State Engineer	$1,154,777 78

The plan for the improvement of the Black river by piers and longitudinal dams was abandoned by the Canal Board September 3d, 1857, and a lock and dam at Otter creek substituted.

Cazenovia Lake Reservoir.

Brought into use in the spring of 1857, at a cost of $10,884.73.

Oswego Canal.

The Phœnix dam was raised temporarily 4 feet 2 in. The statute height was 4 feet 3 in. (see Com. Report, 1838.)

Genesee Valley Canal.

The act authorizing its extension to Millgrove pond, chap. 247, Laws 1857, it was estimated to cost at contract prices, including land damages and engineering, $88,333. The law appropriated $109,000, including land damages and engineering, and adopted the south line, six and a half miles long.

Tolls, Trade and Tonnage.

The following statement shows the number of barrels carried on the canals in each of the years named, and the tolls received by the State:

	Barrels.	
In 1851	3,853,472	$646,402
1852	3,773,815	643,240
1853	3,439,389	565,744
1854	1,550,491	222,472
1855	1,569,303	213,692
1856	1,212,231	146,633
1857	850,000	102,816

The following statement shows the aggregate amount of tolls received on all the canals of the State, during the season of navigation, in the years named below, together with the annual charges for collection and superintendence, and giving the surplus in the third column:

In 1851......	$3,329,727 00	$907,730 00	$2,421,997 00
1852......	3,118,244 00	1,049,045 00	2,069,199 00
1853......	3,204,718 00	1,098,476 00	2,106,242 00
1854......	2,773,566 00	1,237,866 00	1,535,700 00
1855......	2,805,077 00	989,792 00	1,815,285 00
1856......	2,748,212 00	786,633 00	1,961,579 00
1857......	2,031,967 00	970,453 00	1,061,514 00

The statement below shows the steady and progressive increase of the freight traffic upon the two lines of railway competing with the canals, for the period of four years, commencing with 1853, when the several railroads constituting the then New York Central line were consolidated:

ROADS.	Total tolls collected on canals, and freight on railroads, in dollars.		Total tolls collected on canals, and freight on railroads, in dollars.	
	1853.	1854.	1855.	1856.
New York Central railroad...	$1,838,830	$2,479,820	$3,189,603	$4,328,041
New York and Erie railroad..	2,537,214	3,369,590	3,653,002	4,545,782
Total..................	$4,376,044	$5,849,410	$6,842,605	$8,873,823
Total canal..................	$3,204,718	$2,773,566	$2,805,077	$2,748,212

STATEMENT

Of receipts and payments on account of railroads, up to the 30th September, in each fiscal year.

YEAR.	RECEIVED.		PAID.			
	Tolls.	Total.	Collectors and Inspectors.	Stock of the Cayuga and Seneca canal	Surplus tolls to E. and C. canals.	Total.
1845	$10,458 44	$10,458 44	$750 00			$750 00
1846	23,201 89	23,201 89	750 00	$32,160 33		32,910 33
1847	38,946 49	38,946 49	750 00		$38,196 49	38,946 49
1848	96,160 44	96,160 44	684 42		95,476 02	96,160 44
1849	128,534 13	128,534 13			128,534 13	128,534 13
1850	136,424 92	136,424 92	2,390 62		134,034 30	136,424 92
1851	171,055 01	171,055 01	2,247 73		168,807 28	171,055 01
1852	56,901 26	56,901 26	1,883 36		55,017 90	56,901 26
	$661,682 58	$661,682 58	$9,456 13	$32,160 33	$620,066 12	$661,682 58

Act for Payment of Interest on the 15 *per cent. retained on Suspended Work. Passed April* 17, 1857, *chap.* 734.

This act authorizes the Canal Commissioners to pay interest on the 15 per cent. retained prior to such suspension, from and after 90 days after the time fixed for the completion of the work on all contracts made in pursuance of act, chap. 329, Laws 1854.

The act for abandoning the old canal passed April 6, 1857, chap. 267.

The act to use the Black river for a feeder to the Black River and Erie canal, passed April 3, 1857, chap. 245.

Act, chap. 419, Laws of 1857, authorized the Commissioner to deepen the channel from Waterloo to Geneva, and through the outlet of Seneca lake, to nine feet below the surface of water at Waterloo dam.

PROGRESS OF THE CANALS IN 1858.

Black River Canal and river improvement.

In answer to an Assembly resolution, Hon. Van R. Richmond submitted the following report:

The original plan for the improvement of Black river, contemplated the construction of 18 jetty dams and piers, between Beach's Bridge and Lyon's Falls, and the construction of a dam across the river at Carthage. The dam at Carthage, and pier No. 1, was completed, and work commenced on 9 jetty dams. The bulk of expenditures was upon excavation and driving piles. The original estimated cost of this improvement was, at contract prices, $145,839, and in 1838 at $202,800.

The amount expended upon the work was	$87,578 53
do paid for materials not used	14,309 99
do awarded contractors for damages	24,592 24
Total expended	$126,480 76

The substitution of lock and dam at Otter creek was estimated to cost $30,000.

2d *Reservoirs.*

RESERVOIR.	Area reservoir.	Estimatedcost.	Amount expended.	Amount damages.	Cost to complete original plan.	To complete without clearing flow gr'ds.
	Acres.					
North branch..	423	$34,636 92	$36,205 07	$4,105 08	....	....
South branch..	518	19,750 00	9,129 51	2,211 00	$17,500 00	$11,500 00
Chub lake	530	27,700 00	8,185 46	3,000 00	37,000 00	28,200 00
Woodhull......	1,236	18,550 00	11,789 50	*4,000 00	5,000 00	1,200 00
	2,707	$100,636 92	$65,309 54	$13,316 08	$59,500 00	$40,900 00

* Claimed.

(These contracts were abandoned September 3, 1857.)

The quantity of water diverted from Black river, was 14,000 cubic feet per minute, of which 3,000 cubic feet was returned, leaving 11,000 diverted. The reservoirs will furnish 16,000 cubic feet per minute for 110 days. The available quantity at head Moose river is 800,000,000 cubic feet per year.

The amount expended during the year, for construction	$1,558,849 14
Awards of Canal Appraisers	200,000 00
Engineering	124,790 06
Total	$1,883,639 20

The estimated cost to complete the canals, from January 1, 1859, exclusive of land damages, by Hon. Van R. Richmond, was

for the enlargement of the Erie	$995,525 23
Enlargement of the Oswego canal	333,173 12
do Cayuga and Seneca canal	162,750 06
do locks on Champlain canal	104,700 00
Black River canal	151,110 00
Genesee Valley canal	30,320 00
do do do extension	41,050 00
Engineering 10 per cent	181,862 84
	$2,000,491 25
Add for contingencies	200,049 12
Total	$2,200,540 37

During the year 166 contracts were completed and settled, amounting to $4,441 914.35. One hundred and thirty-five contracts were still in existence. Estimated amount of work included in above to complete, not under contract, $765,916 24.

Chemung Canal.

The rebuilding of the locks for the second time since the completion of the canal was commenced, and eight brought into use in the spring of 1858, at an average cost each of $8,484. The first set were rebuilt and brought into use in the spring of 1842, at an average cost each of $5,430. The original set was brought into use with the completion of the canal, September 10, 1831, at an average cost each of $1,650. The average age of the original set was eight years, and second set sixteen years. An act was passed April 14, 1858, chap. 211, for the enlargement of the locks on this canal, after the completion of the enlargement of the Erie; the locks to be composite.

Improvement of the Owasco Lake outlet.

This work was authorized by act, chap. 139, Laws 1852. Its object was to make a reservoir of the lake, to insure a full supply of water for the machinery of the Auburn State prison in the dry seasons.

The following appropriations have been made for this work:

By the Legislature of 1852	$7,000 00	
do do do 1853	6,485 00	
do do do 1855	10,000 00	
do do do 1857	10,000 00	
do do do 1858	3,179 56	
Total		$36,664 56
There has been paid to O. C. Hubbard, by estimates	$13,923 11	
There has been paid to J. H. Ledlie, by estimates	20,650 56	
There has been paid for engineering and contingencies	1,722 12	
Total		36,295 79
Leaving balance unexpended		$368 77

Tolls, Trade and Tonnage.

The whole railway investment, including stock, floating and funded debt, was $149,162,311.81 on the 30th of September last, and this, of course, includes the accommodation for passenger business as well as the freight traffic. The earnings of all the roads on their freight business was $10,532,714.97, and the cost of operating the roads, or expense of carrying on this traffic was $6,254,049.15, excluding the city roads, leaving, as the net earnings of the roads, $4,278,665.82. This sum, divided by the total movement, or number of tons carried one mile, gives an average of 1.017 cents a ton per mile net, while the gross canal receipts for the year, without any deductions for repairs and collections, were only 3.71 mills a ton per mile on the total canal movement.

The average cost of transporting fifty tons of freight through to Chicago by all rail, at published rates, would be $1,116, while by river, canal and lake, that cost would be less than four hundred dollars. The average charge per ton per mile by all rail, on the shortest or Cristline route to Chicago, is 2 45-100 cents, while by lake, canal and river the charge, according to the highest rates given, would not exceed 4 62-100 mills per ton a mile.

The following table of distances has been carefully compiled, and shows the miles by railroad from Baltimore, Philadelphia, New York and Portland, on the Atlantic, to Chicago, the grain mart of the west, and other competing points in the lake country.

The water distance from Buffalo to Chicago is 916 miles, which at the highest lake rates, compared with rail rates, is only equal to about 112 miles of railroad distance in cost of transportation:

		Miles.
From New York to Chicago, by the Pennsylvania railroad, through Pittsburg, Cleveland and Toledo		935
From New York to Chicago, by the New York and Erie, Lake Shore, and Michigan Southern railroads		957
From New York to Chicago, by the New York Central, Great Western of Canada, and Michigan Central railroads		957
From New York to Baltimore	186	
From Baltimore to Cincinnati, by the Baltimore and Ohio, and Central Ohio railroads	632	
From Cincinnati to Chicago	310	
	——	1,128
From New York to Philadelphia	88	
From Philadelphia to Pittsburg	358	
From Pittsburg, by Cristline, Fort Wayne, to Chicago—the new route	465	
	——	911

		Miles.
From Portland to Detroit, by Montreal, Toronto and Hamilton, Canada West	851	
Detroit to Chicago, *via* Michigan Central railroad	282	
		1,133
From Detroit to Albany, by Great Western, Canada, and New York Central railroads	533	
From Albany to New York, by river or railroad	150	
		683

The water lines connected with the New York Central railroad make the rail distance to Chicago less than 450 miles, and in connection with the New York and Erie *via* Dunkirk, that distance is about 570 miles, in cost of transportation at established rates. Hence it costs no more to carry a ton of freight from New York to Chicago by river, canal and lake, 1,425 miles, at the rates above given, than the rail carriage on 270 miles will cost.

The foregoing statements are brought into a tabular form, in order to present the same at one view to the reader.

Cost per ton from Baltimore to Chicago	$23	07
Cost per ton from Philadelphia to Chicago	20	16
Cost per ton from New York to Chicago, by New York and Erie railroad	13	38
Cost per ton from New York to Chicago, by New York Central railroad	10	82
Cost per ton from New York to Chicago, by New York canals, &c.	7	12

The property, of every description, carried on the canals in 1838, was 1,337,357 tons, and paid in tolls $1,588,357. The amount carried in 1856 (which is selected in preference to 1857, a year of unusual depression), was 4,116,087 tons, and paid in tolls $2,748,203. These figures show at once the great reduction in the rates of toll; being from $1.20 per ton in 1838, to 66 cents per ton in 1856.

PROGRESS OF THE CANALS IN 1859.

Champlain Canal.

The Hon. Van R. Richmond, in answer to a Senate resolution dated January 21st, 1859, reported that the estimated cost to make 5 feet depth of water in the Champlain canal was $167,645, and Glens Falls feeder $52,690; total $200,335.

Chemung Canal.

In answer to a Senate resolution, the Canal Commissioner in charge and Lieut.-Governor, a committee appointed by the Canal Board, reported, February 24, 1859, that there were two stone locks constructed upon the Chemung canal; No. 2 cost $15,856, and No. 3 $15,477; that there were 54 locks upon the canal and feeder, which to reconstruct of stone would cost, at above prices, three-quarters of a million dollars; that the lock by which the trade of the Chemung passes into the Erie canal, passes about one-third as many boats as by the locks west of Montezuma junction on the Erie, and one-half as many as passed on the Champlain canal, and two-thirds as many as the Oswego canal; also, that the average receipts of this canal, from 1853 to 1857 inclusive, were $18,000 per year, which, on 200 miles, would amount to $120,000; that this canal became the outlet of the Pennsylvania canals by its connection with the junction canal lately completed, thus reaching into the vast deposits of anthracite and bituminous coal of that State.

Oswego Canal—its cost.

The State Engineer and Auditor, in answer to a Senate resolution, February 14, 1859, reported: That the original estimated cost of the Oswego canal, when commenced, was $437,000, and its cost when completed was $565,437.35; that the total expenditure up to 1854 were as follows, viz:

By Canal Commissioners, for construction, enlargement and extra repairs	$934,334 80
By superintendents of repairs	808,192 86
Paid collectors and inspectors	71,957 36
interest on loans	427,395 54
miscellaneous payments	22,426 20
	$2,264,306 76

The estimate for enlarging and completing in 1854 was $1,218,763.22.

There has been paid on account of said enlargement and completion, from 30th Sept., 1853, to Oct. 1st, 1858	$1,289,709 89
Amount outstanding drafts for work on same, Oct. 1st, 1858	$168,351 64
Total	$1,458,061 53

Estimated cost to complete from and after January last, was $333,173.12.

The total expenditures on this canal up to October 1st, 1858, as follows:

By Canal Commissioners for construction of enlargement and extra repairs	$2,224,044 69
By superintendents of repairs	1,180,438 28
Paid collectors and inspectors	102,310 73
Paid interest on loans	487,395 54
Miscellaneous	26,441 08
Unpaid drafts	168,351 64
Total payments	$4,188,981 96

And the whole receipts to Sept. 30, 1858, as follows:

For premiums on loans	$21,690 00	
tolls, commencing in 1828	1,558,712 13	
sales of land	213,087 97	
rent surplus water	6,370 53	
miscellaneous receipts	60,403 25	
		1,860,263 88
Excess of payments over receipts		$2,328,718 08

Lengthening enlarged locks.

Van R. Richmond, State Engineer, in answer to a Senate resotion, estimated the cost of lengthening 22 single, 53 double, 5 double combined, 2 guard and 5 weigh locks, on the Erie canal; and on the Oswego canal, 19 single and 5 guard locks, (after taking down 20 feet at upper ends,) 33 feet on extension of foundations, as follows, for a boat 130 feet long:

Lengthening	53	single locks at $6,000 each	$318,000
do	53	double locks at $12,000 each	636,000
do	7	guard do $5,000 do	35,000
do		combined locks at Lockport	225,000
do	5	weigh locks, including scales	50,000
			$1,264,000

And the same for slide gates at head (if practicable) $418,200.

Hon. Van R. Richmond estimated the cost to complete the enlargement of the Erie canal after Jan. 1st, 1860, exclusive of

land damages, at	$535,626 30
Completion of lateral canals	494,060 39
Contingencies	150,000 00
Total	$1,179,686 69

showing a diminution in the estimates of the cost to complete, as compared with last year, of $46,039.69.

Black River Canal.

This canal is entirely completed from its junction with the Erie to its entrance into the Black river at Lyon's Falls. The dam and lock at Otter creek were put under contract the past year, (at an estimated cost, at contract prices, of $27,309,) also the Woodhull and South branch reservoirs.

Interest on Canal Drafts.

By the act, chapter 149, Laws of 1859, the Legislature appropriated $125,000 to pay the accrued and accruing interest on drafts drawn by the Canal Commissioners for work done on the canals, for damages awarded by the Canal Appraisers, and for awards made by the Canal Board, and to pay the interest on damages awarded by the Canal Appraisers, the Canal Board, and Board of Canal Commissioners, previous to the first day of Jan'y, 1859, for which drafts had not been given, and to pay the interest on the temporary loan of $200,000.

Tolls, Trade, and Tonnage.

The following statement shows the number of tons of through freight carried by the New York Central railroad during the three years named, the earnings therefor, and the average receipts per ton each year:

1857	Tons carried,	292,877	Receipts,	$2,518,785 93	Av. ton,	$8,60.00	Decrease.
1858	do	312,408	do	2,125,726 85	do	6,80.43	$1,79.57
1859	do	348,079	do	1,995,572 07	do	5,73.28	1,07.15

Carrying, in 1859, 55,202 tons more than in 1857, the receipts of the road were $523,213.86 less. The road carried 35,671 tons more in 1859 than in 1858, and the receipts were $130,154.78 less.

The effect of the competition of the two great southern lines, upon the traffic of the New York Central, will be well illustrated by giving the prices charged and received per ton for through freight on those lines. In 1859, the Pennsylvania railroad carried 221,210 tons through freight, and received $8,09.62 average per ton. The Baltimore and Ohio railroad, in 1858, carried 224,863 tons of through freight, and received $7.34 per ton of 2,000 pounds, average.

Comparative statements of the movement of freight on the two railways connecting New York with Lake Erie, and the State canals during the last four years, showing the tons carried each year, the total movement, or number of tons moved one mile, and the freight and tolls received therefrom.

	1856.	1857.	1858.	1859.
Tons carried by railway..............	1,719,327	1,816,857	1,582,371	1,703,392
Tons carried by canal................	4,116,082	3,344,061	3,665,192	3,781,684
Aggregate of both..................	5,835,409	5,160,918	5,247,563	5,485,076

STATEMENT *showing the tons of each class of property transported on the New York Central, and the New York and Erie Railroad, and on the New York Canals, during the year* 1859.

	The forest.	Product of animals.	Vegetable food.	Other agricultural products.	Manufactures.	Merchandise.	Other articles.	Total.
New York C. RR.	35,154	205,167	249,751	30,096	57,036	178,782	79,333	834,319
N. Y. and E. RR.	97,754	170,322	112,727	15,107	94,266	179,050	199,846	869,072
	132,908	374,489	362,478	45,203	151,302	357,832	279,179	1,703,391
N. Y. State canals	1,542,035	36,151	773,655	6,978	299,421	211,182	912,262	3,781,684
Excess by canals.	1,409,127	....	411,177	......	148,119	....	633,083	2,601,506
Excess by railr'ds,	....	338,338	....	38,225	....	146,650	....	523,213
Total excess by c'ls	....	....	....	......	....	....	....	2,078,293

CANADIAN CANALS.

A comparative statement of the tonnage of goods and property which passed through and on the undermentioned canals in Canada, for the years mentioned below, distinguishing the up and down trade.

	WELLAND CANAL.				ST. LAWRENCE CANAL.			
	1855.	1856.	1857.	1858.	1855.	1856.	1857.	1858.
Tonnage up.......	229,012	276,919	245,256	195,144	122,205	131,430	134,382	110,807
Tonnage down....	629,321	699,637	655,816	659,968	419,049	503,106	459,270	494,751
Total tonnage up and down.......	849,333	976,556	901,072	855,112	541,254	634,536	593,652	605,558

Aggregate of up tonnage on the Welland canal	937,331
Aggregate of down tonnage on the Welland canal	2,644,742
Total movement for four years on Welland canal	3,582,073

Aggregate of up tonnage on St. Lawrence canal	498,824
Aggregate of down tonnage on St. Lawrence canal	1,876,176
Total movement for 4 years on St. Lawrence canal	2,375,000

Of the total tonnage, 852,671, which passed through the Welland canal in 1858, there was shipped from Canadian to American

ports		93,649	tons.
From American to American ports		482,767	do
Total American tons		576,416	
From Canadian to Canadian ports,	155,624		tons.
From American to Canadian ports,	120,631		do
Total Canadian tons		276,255	
Total tons		852,671	

Showing two tons of American traffic to one ton of Canadian, through this canal.

Of the total tonnage, 605,558, which passed through the St. Lawrence canal in 1858, there was shipped from Canadian to

Canadian ports		546,798	tons.
From American to Canadian ports		14,538	do
Total Canadian tons		561,336	
From Canadian to American ports,	44,193		tons.
From American to American ports,	29		do
Total American tons		44,222	
Total tons		605,558	

Of this movement in Canadian waters, 837,591 tons were Canadian, and 620,477 tons were American; aggregate of both, 1,458,629 tons.

Acts passed during the year.

The Canal Board to cancel contracts, only when the State has ailed to make payments, on the application of the contractor;

passed April 19, 1859; chapter 495. This law also abolished assistant collector and appointed Inspectors; also invested the clerk of the Contracting Board with power of commissioner of deeds.

The act authorizing the Auditor to act in place of a disqualified Canal Commissioner, passed April 15, 1859, chap. 376. The act to lay a railroad track on the berme bank of the Chenango canal, passed April 19, 1859, chap. 501.

Plans of Canal Structures.

During the last term of State Engineer and Surveyor Richmond's administration, numerous complaints were made that but few correct copies of original plans could be found in the principal engineer's offices along the line of the canal. To avoid future embarrassment, S. H. Sweet, resident engineer at Syracuse, was directed to prepare and perfect a set of the principal plans in use on the canals, for publication. In absence of correct plans he obtained the dimensions from structures already built. The following is a list of the structures so prepared and published, and accompanied Mr. Richmond's annual report for 1859, drawn on scales of from six to eight feet to an inch, to which have been added the designing engineers, and the average cost of each:

General plans—Kind of structure.	Size.	Designing engineer.	Cost each by contract.
Timber locks..............	93½ x 16........	No. 1, Van R. Richmond, No. 2, Van Vleck & Sweet.	$8,200
Wood bridge superstructure	72 span x 14....	Squire Whipple.	420
Seneca River aqueduct	894¼ trunk.....	Van R. Richmond.	200,000
Iron arch bridge	72 ft. span.....	1 roadw'y & 2 s'walks, S. Whipple	1,700
do	100 do	do do Sq. Whipple.	2,325
Iron trapezodial truss	120 do	1 roadway, Squire Whipple.	
Dam and bulkh'd RR feeder	360¾ x 6	D. C. Jenne & Wm. B. Taylor.	23,060
Enlarged double locks.....	172¼ x 18	Jervis, Hutchinson, Barrett, Mills & Childs.	73,850
Beardslee b'dge iron chord.	72 ft. span	Iron-combination, by S.H.Sweet.	500
Composite locks...........	90 x 15	Van R. Richmond & O.W. Childs.	10,000
Bridge, wood, lateral canals.	50 x 12	S. H. Sweet.	260
Waste weir...............	100 waste	Jervis, Hutchinson, Mills, Childs.	6,320
Composite lock valve......	8 for 1 lock.....	Jno. Beardslee, pr. valve.	30
Plans of culverts..........	2 arches x 10 ch'd	at Yorkville, Wm. B. Taylor.	
Composite culverts			
Stone box do		Van R. Richmond.	
Pipes, culverts Erieville reservoir		Squire Whipple.	352
Wood farm bridge abutmet's	72 x 12	Jno. T. Clark.	

PROGRESS OF THE CANALS IN 1860.

Hon. Van. R. Richmond reported the "amount necessary to complete the enlargment, exclusive land damages, January 1st,

1861	$357,975
And the lateral canals, with engineering and contingencies	342,025
Total to complete	$700,000

The number of unfinished contracts on the 1st day of January, 1860, as stated in the last annual report from this Department, was 80. During the year 28 contracts have been completed and settled, and 24 new contracts have been entered into, leaving 76 contracts existing at the commencement of the present year.

The contracts settled the past year amount to $766,879.92. The existing contracts amount to $2,370,285.82, upon which the work remaining to be done is estimated at $294,633.89. The work remaining to be done, and not under contract, is estimated to cost $263,859."

Section 4, act chapter 213, Laws of 1860, authorized the Canal Commissioners to cut the bevels from the enlarged locks on the Erie, Oswego, and Cayuga and Seneca canals whenever it became necessary; also, to raise to 12 feet above 7 feet surface water, such of the bridges over said canals as are not now of that height.

Champlain Canal.

Section 2, act chap. 213, Laws of 1860, provides for "the improvement of the Champlain canal and Glens Falls feeder, so as to give for its entire length a depth of five feet of water, and a uniform width of thirty-five feet on the bottom, or as near these proportions as, in the opinion of the Canal Board, may be deemed judicious. This act, also, provides for rebuilding the residue of the locks on said canal (as soon as they may be required by the demands of navigation), and the stopping of all leaks in the Glens Falls feeder, for the sum of one hundred and seventy thousand dollars.

Statement showing the sums which have been appropriated and expended for rebuilding the locks on the Champlain Canal.

By act, chapter	329,	Laws of	1854	$25,000 00
do	330,	do	1854	25,000 00
do	528,	do	1855	25,000 00
do	148,	do	1856	25,000 00
do	157,	do	1856	60,000 00
do	365,	do	1857	121,391 08
do	149,	do	1859	60,115 00
1859, Sept. 30.	Appropriation overdrawn			69,136 86
				$410,642 94

The law making the appropriation of 1854, '55 and '56 distinctly specifies that it is "for the expense of enlarging the locks of the Champlain canal beyond the cost of reconstructing them of their present dimensions."

This well-defined description of the work intended to be embraced under the appropriations is left out in the subsequent acts of 1856, '57, '58 and '59.

The entire cost of all the works done under the acts of 1854, '55 and '56 has been charged to this canal, without making any deduction for the cost to "rebuild the locks of their present dimensions."

Statements showing the Tolls, Trade, and Tonnage of the Champlain Canal and Glens Falls Feeder, from 1850 *to* 1859 *inclusive.*

Years.	Tolls.	Value.	Tonnage.
1850	$133,969 43	$8,594,841 00	460,219
1851	119,333 77	5,910,213 00	513,793
1852	114,591 51	7,613,826 00	531,001
1853	120,998 05	10,604,522 00	608,354
1854	103,522 88	10,280,702 00	602,913
1855	106,524 67	10,558,378 00	537,108
1856	111,229 15	10,747,438 00	611,610
1857	104,889 99	14,176,061 00	547,236
1858	96,936 75	11,418,370 00	608,918
1859	106,361 91	17,523,193 00	820,673
	$1,118,358 11	$107,427,544 00	5,841,825

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Statement of the Amounts Expended for Repairs of the Champlain Canal, from 1850 *to* 1859, *inclusive.*

Year.	By sup'ts, resid't engineers, and repair contractors.	By Canal Commissioners.	Total by sup'ts, resid't engin'rs, rep'r contractors and Canal Commissioners.
1850	$62,823 86	----------	$62,823 86
1851	50,966 83	$13,539 15	64,505 98
1852	75,519 01	30,390 89	105,909 90
1853	78,963 36	5,321 78	84,285 14
1854	72,582 41	6,724 85	79,307 26
1855	90,383 21	12,175 28	102,558 49
1856	45,374 20	5,770 29	51,144 49
1857	72,640 31	200 00	72,840 31
1858	81,059 16	----------	81,059 16
1859	64,875 76	9,947 25	74,823 01
	$695,188 11	$84,069 49	$779,257 60

Black River Canal.

The contracts for the following work were completed during the year 1860 :

Woodhull lake reservoir, at a cost of $10,818; South branch reservoir $10,300; Delta feeder and bridges for same, $14,230.

There are now constructed on the branches of Black river three reservoirs—North and South branch, and Woodhull lake. These are useful to supply to the Black river in dry time the water diverted to the Boonville feeder for the navigation of this canal, and to furnish water for the Mohawk feeder at Rome.

Below are the capacities of the reservoirs and the number of acres flowed :

	Acres.		Capacities c. ft.
North branch reservoir	423	(filled twice)	619,868,800
South branch do	518		421,190,000
Woodhull do	1,236		780,943,680
Total	2,177		1,822,002,480

The total capacities of the three reservoirs will furnish 11,000 cubic feet of water per minute for 115 days.

By the Legislature of 1859 this amount of water was directed to be obtained in the construction of so many of the four reservoirs then contemplated as would furnish the 11,000 cubic feet.

Supply of water for the "Long" or "Summit" Level.

Reports upon Fish creek, and De Ruyter reservoir—Hon. Wm. I. Skinner advocating the adoption of the former and State Engineer Richmond the latter; which was subsequently adopted by the Canal Board. The following is Mr. Richmond's report, accompanying his annual report for 1859, on the same:

Supply of water.

"Provision is made for an adequate supply of water for purposes of navigation upon all the canals of the State now completed or under construction and enlargement, except the Rome level of the Erie canal.

Early last spring I submitted to the Canal Board for their adoption maps, plans and estimates for the construction of the De Ruyter reservoir (which is fully described in my former reports,) for the additional supply required for this level. Action was deferred to enable the Canal Commissioner of the Eastern division to have surveys and estimates made for a feeder from Fish creek. The results of these surveys, &c., were laid before the Canal Board in November last. The questions involved have been reported upon by two separate committees, of which the State Engineer and Surveyor was a member. A marked diversity of opinion existed between the members of the committee, and the undersigned deems it proper to give the following brief extracts from his report to the Board in support of the reasons that impelled him to officially recommend the construction of the De Ruyter reservoir.

The total amount of water furnished from present sources, can only be approximately estimated at this time, owing to the want of accurate gauges, in the dryest seasons, of some of the feeders. From the best information at my command, I estimate the present supply of water—with minimum flow of streams—between Lodi and Little Falls, at 24,600 cubic feet per minute.

The total amount required for a maximum of business upon the Erie, and a corresponding increase upon the connecting lateral canals, is estimated at 30,000 cubic feet per minute.

The deficiency between Lodi and Higgins, including the Oneida Lake canal, is estimated at 4,100 cubic feet per minute, and from Higgins to Little Falls, at 1,300 cubic feet per minute.

As these amounts are estimated for extremes, not only of demand, but of minimum supply, it is probably safe to assume that 60 to 70 per cent. of these quantities would meet all the deficiency accruing in the next ten or fifteen years.

Two plans have been submitted for your consideration, to supply this deficiency.

The first plan contemplates constructing the De Ruyter reservoir, on the head waters of Limestone creek, and securing the supply through the present Limestone creek feeder into the canal six miles east of Lodi. It is estimated to furnish, for a period of 100 days, (assumed as the limit of drouth for which this supply is required,) 3,400 cubic feet per minute, at an estimated cost, including damages, of $120,000.

The second plan contemplates constructing Fish creek feeder, from near McConnellsville to the Erie canal near Fort Bull, a point about thirty-six miles east of Lodi. The feeder is estimated to cost, exclusive of damages to mill power upon Oneida and Oswego rivers, about $225,000, with a capacity of prism capable of furnishing 8,000 cubic feet per minute.

Neither of these plans can be so executed as to make the supply available until the spring of 1862.

The construction of Fish creek feeder would furnish a sufficient supply of water for all future wants, and would require a present expenditure of over $300,000, in addition to damages to mill power, &c. The construction of the De Ruyter reservoir would furnish an ample supply, in the judgment of the undersigned, for the next ten or fifteen years, and would require a present expenditure of $120,000.

If Fish creek feeder be adapted, the Lodi locks must be supplied, as now and formerly, from the Chittenango feeder, fourteen miles distant, passing the water against the prevailing winds, and the boats carrying the greatest tonnage. This can be done only by elevating the surface at Chittenango, and creating a strong current westward. A corresponding or greater elevation must be maintained at the mouth of Fish creek feeder, to supply the lockage from that point to Chittenango.

During the past three years, numerous observations have been taken in times of greatest lockages, (although never exceeding seventy per cent. of the maximum used as the basis of calculations for total required,) and the elevation of surface at Chittenango equaled five to seven inches above the same at Lodi. When the maximum business is attained, a larger amount of water must be passed against a larger number of boats, &c., with a consequent increase of elevation and current.

It is reasonable to assume that the banks, aqueducts, weirs and bridges will eventually have to be raised between Manlius and Rome, to provide for this increased elevation of the surface of the water. The strong current consequent upon feeding Lodi locks from Chittenango, averaging from ½ to ¼ mile per hour, would undoubtedly be a considerable detriment to navigation, and increase the cost of transit.

If the supply be obtained from the De Ruyter reservoir, it would enter the canal six miles east of Lodi, and have eight miles less distance to pass through the canal. It is obvious that the elevation and current would be greatly diminished.

The diversion of the waters of the Fish creek to the canal, would diminish, to a more or less extent, the machinery upon Oswego river, and decrease the tonnage or revenue of the canal.

The construction of De Ruyter reservoir would create and add machinery upon the Limestone, and to some extent add revenue to the canals.

The De Ruyter reservoir was substantially adopted many years ago, after a careful examination of the whole subject by Orville W. Childs, chief engineer. For the past few years it has been included in the estimates for completing the enlargement, and the present legislative appropriation for that object was based upon the estimate for this reservoir. In the opinion of the undersigned, it is doubtful policy, at this time, to double, or more nearly treble, the expenditure for this object.

Upon a careful consideration of the facts and circumstances connected with this question, I would respectfully recommend that the plan for constructing the De Ruyter reservoir, for furnishing an additional supply of water for the Rome level, be approved and adopted. I am confident in the belief that this plan will furnish all the additional water necessary for many years, and all that is expedient, or prudent economy to authorize at this time."

Report of Wm. I. Skinner, Canal Commissioner, upon Fish Creek Feeder.

To the Canal Board:

"The undersigned, one of the committee to whom was referred the subject of supplying the Rome, or long level of the Erie canal, with water, respectfully submits the following report:

The undersigned starts with what seems to be admitted on all hands, an insufficient supply of water on that level for the present purposes of navigation, and that this insufficiency will be increased with the increase of business and lockages.

I herewith submit a full and well considered analytical examination of the whole matter, prepared by S. H. Sweet, late resident engineer, and intend to make this the basis of my present remarks. The supplies and deficiencies, to and from various points between locks 47 and 39, are distinctly and briefly stated as well in relation to the present as the prospective trade on the canals.

The deficiency of water between lock 47 and Higginsville, or nine miles west of it, after the De Ruyter is brought in with an estimated supply of 3,891 cubic feet per minute, will be 1,707 cubic feet per minute. The distance to be supplied from Rome, west of Higginsville, will be nine miles, and the whole distance unsupplied, east of Higginsville, exclusive of Oneida lake, will be 18⅝ miles, after the De Ruyter is brought in. If this deficiency has to be supplied from Rome, then it is evident, from the subsequent statements of Mr. Sweet, that the deficiencies to lock 39 will be so great, that even a five foot navigation cannot be maintained, in the dry season, between Rome and lock 39.

But can the estimated supply from the De Ruyter, of 3,891 cubic feet per minute, be relied upon?

If that amount is discharged from the reservoir, the residue, after deducting evaporation, lockage, and other wastage, will probably reach the canal in regular supply, if the State appropriates and pays the damages for the whole bed of the stream, and all the mills and other erections thereon, from the reservoir to the canal. If this be not done, the water discharged from the reservoir must pass through a colonade of mill dams from it to the canal. These dams will be closed at night, and when well filled to their full capacity, the State will probably be allowed to take the wastage until the mills are set running in the morning;

consequently the supply will be irregular, and then, as heretofore, the water at the west end of the level will run down by the discharges at lock 47; the boats on the west end of the level will be aground in the morning, and must remain aground until the level is raised by the discharges from the mill ponds.

If we have not yet had enough of this sort of partnership, between the State and private parties, in respect to waters needed for canal purposes, we shall probably get it after this reservoir is constructed, and an attempt to supply our needs for water from private mill dams. I refer to the remarks of Mr. Sweet on this subject, in note G of his statement.

In the estimate of the cost of construction of this reservoir, I do not understand the damages for the bed of the stream and the structures upon it are embraced.

The undersigned now passes to that part of the level from nine miles west of Higginsville east, and to lock 39 at Little Falls. The total deficiency on this part of the canal, including the Oneida Lake canal, is 9,369 cubic feet per minute, and without that canal 8,268. The distance from lock 39 to Higginsville, 48⅝ miles. The present supply taken in at Rome, and east of that place, is 15,030 cubic feet per minute. The required supply on the estimated trade, 18,801; deficiency, 3,771, showing that if the losses by evaporation, filtration and waste, between Rome and nine miles west of Higginsville, are made good by a feeder between these two points, all the deficiencies east of Rome will be supplied at that point, and by feeders east of it to lock 39.

A deficiency in the supply of water on this level, even for present purposes, seems to be admitted on all hands, and it is anticipated this deficiency will largely increase when we fill the canal to its enlarged capacity of seven feet by seventy, and we have seen that the De Ruyter reservoir cannot supply our wants, even on the western end of the level, from nine miles west of Higginsville to lock 47; leaving the intermediate distance to Rome unsupplied, or to be supplied from that place. The undersigned refers to the reports of division engineers Van Vleck and Taylor, read to this Board in December last, and also to the report of the State Engineer in November last, in reference to a resolution of this Board, of September 6, 1860.

Mr. Taylor estimates that a supply of 8,000 cubic feet per minute may be obtained from Fish creek, to be taken into the canal four miles west of Rome. This supply is obtained from a living, running stream of water, and taken through a channel owned by the State, not liable to obstructions and diversions by mills and mill dams, nor subject to the claims of riparian owners.

But it is urged that heavy claims for damages will be interposed by citizens of Oswego, for the diversion of this water from a tributary of the Oswego river.

Let me inquire, one moment, into the extent of any claim of this sort; and the justice of it, if any should be established. All the leakage, soakage and drainage, from the canal west of Rome, is into lands bordering on Wood creek, a tributary of Oneida lake, and into lands bordering on that lake. None of it comes east of that point. All the discharges from the Erie canal through the Oneida Lake canal, are into the lake, being 1,101 cubic feet per minute. All the discharges at lock 47, are on to the Syracuse level, where they flow into tributaries of the Oswego river, and are equal, during the dry season, to 3,072 cubic feet per minute, supplied by the State from its numerous reservoirs. I may venture the remark, with much confidence, that not a drop of water from the Fish creek feeder will find its way east of Rome. Some of it may, but I do not think so. The waters of the contemplated feeder will crowd the natural and artificial flows into the canal west of it towards lock 47, and increase the discharges from that point into the Syracuse level. The loss to Oswego will be the difference in evaporation, &c., by the feeder water passing round into the Syracuse level by the contemplated route, and the more direct flow into the Oneida lake.

But, one moment to the equity of any such claim against the State, aside from any considerations resulting to the commerce and trade of Oswego, by a full supply of water on this level.

The drainage basin of the Oswego river is more than 75,000 square miles, and is equal to one-sixth of the area of the State.

Into this basin the State, by artificial channels, discharges from

Lake Erie and Chemung river, a volume of water equal to	11,887	cub. ft. per min.
From reservoirs during the dry season	5,816	do
From reservoirs, an increase by the increase of heads to certain reservoirs, as per report of State Engineer	3,072	do
Total	*20,775	do

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* See detail calculation under note A for theoretical quantity.

By the application of these waters to the purposes sought, the commercial enterprise of Oswego will be fostered and promoted equal to that of any other place in the State, located upon our enlarged water communications. Has the State dealt harshly with that enterprise? Has she not given more than she proposes to take? And yet we should not take that even, if it can be avoided, nor if we are to respond in damages to an amount exceeding the public advantages to follow the appropriation. As the supply from the De Ruyter reservoir cannot be made available the next season, when the same may be needed, and as the supply from that source is confessedly inadequate to our wants, even when secured, the undersigned, in view of the great interests at stake, can cheerfully put himself on record in favor of the proposed Fish creek feeder. If any doubts shall be suggested in regard to the supply from this source, he will remark that the waters of Salmon river, as he is informed, can be brought into aid at small expense."

Utica, *December 29th*, 1860.

Hon. Wm. I. Skinner, *Canal Commissioner:*

Dear Sir—In answer to your several inquiries, made 21st inst., I beg leave to submit the following report:

Note A.

The quantity of water brought to the basin drained by the Oswego river, from Lake Erie and Chemung river................ =11,887 c. ft. per m.

Note B.

The quantity carried in the same direction from reservoirs during dry season...... =*5,816 do

Note D.

The quantity required and used by the Oneida Lake canal........................... = 1,101 do

Note G.

The supply from De Ruyter reservoir for 100 days.............................. = 3,891 do

Note C.

The present supply between lock No. 47 and Higginsville........................ = 7,584 do

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* See Note K for this quantity, as increased by State—3,072 cubic feet per minute.

Note H & E.

The quantity required for a trade of 300 lockages between said points = 13,179 c.ft. per m.

Note F & H.

The deficiency of above trade between said points = 5,598 do

Note F.

The deficiency after adding De Ruyter to present supply for said trade and distance = 1,707 do

The distance that water will be sent east of lock 47 with present supply = 5⅓ miles.

The distance the water will be sent east of lock 47, with De Ruyter added to present supply = 24½ do

The distance from lock 47 to Higginsville = 33½ do

The distance west of Higginsville to be supplied from Rome, after construction of De Ruyter = 9 do

Note J & H.

The total deficiency between locks 47 and 39, including Oneida Lake canal = 9,369 c. ft. per m.

Note I.

The present supply between Higginsville and lock No. 39 at Little Falls = 15,030 do

Note J.

The quantity required for a trade of 300 lockages per day for same = 18,801 do

The deficiency for above trade and distance = 3,771 do

Note K.

The distance suplied west of lock 39, with present supply and above trade = 30 miles.

Note I.

The distance from lock 39 to Higginsville = 48⅚ do

Note K.

The distance east of Higginsville (exclusive of Oneida Lake canal) unsupplied = 18⅚ miles.

The intermediate distance unsupplied, (including do.,) being 28⅙ miles west, and 18⅚ east, of Higginsville, (with present supply between Higginsville and lock 39) = 47 do

Note E.

For the quantities discharged at different periods into Syracuse level, see detail calculation, Note E.

The following are calculations in detail of the foregoing results:

Note A.

The quantity of water brought to the basin drained by the Oswego river from Lake Erie and Chemung river.

1*st. From Lake Erie.*—Under a Senate resolution, dated January 26, 1850, the Canal Commissioners caused an examination and report to be made by Henry Tracy, Esq., upon the subject of a supply of water for the Erie canal from Buffalo to Montezuma, to be drawn from Lake Erie.

From the report of Mr. Tracy, the Commissioners fixed the size of the prism of the canal, from Tonawanda creek east, of capacity sufficient to deliver from Lake Erie at the following points, the following quantities, cubic feet per minute, viz:

To pass	Black Rock	35,020	cubic feet	per minute.
do	Tonawanda creek	31,240	do	do
do	Pendleton	31,000	do	do
do	Middleport	27,200	do	do
do	Albion	24,000	do	do
do	Brockport	21,000	do	do
do	Rochester	17,000	do	do
do	Clyde	6,100	do	do

Measurements were made under the direction of John D. Fay, division engineer, to find the actual discharge from Lake Erie. The measurements being made during the dry season of 1858, resulted as follows, viz:

Mean velocity $\frac{58}{100}$ miles per hour, between Black Rock and Tonawanda, discharge 31,370 cubic feet per minute at Tonawanda. Hence, the actual discharge being a trifle over the quantity contemplated, there must of necessity be delivered at Clyde at least 6,000 cubic feet per minute. The quantity passing at Clyde lock November, 1860, as measured by Mr. Schamerhorn =3,700 cubic feet per minute, the amount used.

2*d. From Chemung river.*—The water from this river is taken into the Chemung feeder at Gibson, and discharged into the summit level of the Chemung canal, at Horseheads, 16 miles in length. This stream seldom, if ever, fails to supply the demand. There have been times when the full capacity of the feeder has not been realized, caused by neglect in keeping the bulkhead and structures in repair, and clearing the prism of a heavy growth of weeds.

The theoretical discharge of this feeder is=12,050 cubic feet per minute, but the actual discharge at canal is=10,870, and supplies the canal south from junction to Elmira, six miles, and north to Seneca lake, 17 miles. The quantity required and fed south is—(supply being)

south is—(supply being)		10,870
24 lockages per day ×12,000 cubic feet each = cubic feet per minute	170	
Add 25 per cent. for flushing boats out of lock, = cubic feet per minute	42	
Evaporation on 6 miles, one-third inch from surface, = cubic feet per minute	25	
Leakage through lock gates, = cubic feet per minute	700	
Filtration on 6 miles, 63½ cubic feet per mile, = cubic feet per minute	381	
Waste at structures, 9 cubic feet per mile, = cubic feet per minute	54	
		1,372
Cubic feet per minute, started north =		9,498
The quantity lost on this in passing through the canal to Seneca lake:		
Evaporation on 17 miles, one-third inch from surface, = cubic feet per minute	75	
* Filtration on 17 miles = cubic feet per minute	1,080	
* Waste on 17 miles = cubic feet per minute	156	
		1,311
Total cubic feet per minute discharged into Seneca lake from Chemung river		8,187
Total cubic feet per minute discharged into Seneca river from Lake Erie		3,700
Total c. ft. per min. discharged into Seneca lake and river		11,887

---

* 1,100 cubic feet per minute of this actually enters Seneca lake through the river adjoining the canal, which, together with the balance of the 6,000 cubic feet (after deducting quantity passed at Clyde lock,) thrown forward from Lake Erie, 2,300, increases the volume from 20,775 to 21,475 thrown into the Seneca river.

Note B.

The quantity of water discharged into basins drained by the Oswego river from reservoirs, during the dry season, in excess of the natural flow of the same.

If measurements are not made before the construction of a reservoir, the only method to obtain the "natural flow" from lake reservoirs, would be the drainage from valley or basin, minus the excess of evaporation over fall of rain on pond for a definite period; and the total supply, the artificial capacity added to the "natural flow." The following supplies are calculated for 120 *days*, July to October, inclusive, 10 *inches fall of rain*, 0.28 as the ratio of *drainage* to the total fall of rain, and 33 inches *evaporation* for this period, all adopted from the following facts and experiments, viz:

The average fall of *rain* in this State, from 1826 to 1856, for July, August, September, and October = 14.85 inches.

The ratio of *drainage* to the total fall of rain and snow for the year, was found to be for 1835, 1837, 1838, 0.44 per cent., from July to October, 0.28 per cent., determined from experiments by John B. Jarvis, Esq., on Madison and Eaton brook reservoirs.

Evaporation—(*Dry season.*)

From experiments made in St. Lawrence Co., = $\frac{33}{100}$ of an inch daily.

From experiments made by J. Trempter, Seneca lake, = $\frac{40}{100}$ of an inch daily.

From experiments made in Central Park, New York, = $\frac{50}{100}$ of an inch daily.

From experiments made in Erie and Chenango canals, $\frac{20}{100}$ to $\frac{33}{100}$ of an inch daily. And from other sources, found to be for the year 49 inches, in this State.

Taking the average of the five experiments, we have for daily evaporation, during dry season, $\frac{33}{100}$ of an inch.

1st. *From Skaneateles Lake reservoir.*—Area of pond = 8,320 acres; area drainage basin = 90,000; available head = 6 ft. The water is discharged into the Erie canal at Jordan, through the natural channel of the outlet, ten miles in length. Measurements were made by S. H. Sweet, of its flow during the dry season of 1859, and the entire season of navigation, and it was found to deliver at the canal for 120 days, at the rate of, cubic feet per minute.. 7,520

Deduct nat. flow = $\left(\dfrac{(90,000\times 43.560\times \frac{10\times 0.28}{12})-(8320\times 43.560\times \frac{33-10}{12})}{120\times 24\times 60}\right)$ = 1,288

Surplus of the canal, cubic ft. per min. 6,232

And the loss on this in passing seventeen miles through the canal to Montezuma, (where it is discharged into Seneca river,) is in proportion to the loss by filtration, waste and evaporation, on the whole amount passed in the canal, which was, in 1859, = 173 cubic ft. per min. per mile on 7,575 = 0.02281 loss on each cubic ft. passed per mile, which on above would be = 6,232 × 0.02281 × 17 =... 2,414

C. ft. per min., total discharged into Seneca river from Skaneateles lake 3,818

2d. *From Cazenovia Lake reservoir :*

Area of pond = 1778 acres ; area drainage basin = 25,000; head $4\frac{1}{2}$ ft.

Capacity = $\dfrac{1778\times 43.560\times 4\frac{1}{2}}{120\times 24\times 60}$ = c. ft. per min.................. 2,017

+ natural flow = $\left(\dfrac{(25,000\times 43.560\times \frac{10\times 0.28}{12})-(1778\times 43.560\times \frac{33-10}{12})}{120\times 24\times 60}\right)$ = 614

Total supply cubic ft. per min.......................... 2,631

Deduct natural flow.................................. 614

Leaving a surplus at canal, cubic ft. per min............. 2,017

and the loss on this in passing twenty-one miles, from Chittenango to Mud lock on the Oswego canal, (where it is discharged into Seneca river,) being the same per c. ft. as Jordan level = 0.02281 × 2,017 × 21 = c. ft. per min..... 966

Total surplus from Cazenovia lake, c. ft. per min. = 1,051

3d. *From Erieville reservoir:*

Area of pond = 340 acres ; drainage basin = 8,000 ; head = $21\frac{1}{2}$ ft.

Capacity = $\dfrac{340\times 43.560\times 21\frac{1}{2}}{120\times 24\times 60}$ = c. ft. per min.................. 1,820

+ natural flow = $\left(\dfrac{(8000\times 43.560\times \frac{10\times 0.28}{12})-(340\times 43.560\times \frac{33-10}{12})}{120\times 24\times 60}\right)$ = 310

Total supply, c. ft. per min. ....= 2,130

Deduct natural flow, c. ft. per min.................= 310

Leaving surplus at canal, cubic feet per min...........= 1,820

on which there is a loss in passing twenty-one miles through the canal from Chittenango to Mud lock (where it enters Seneca river,) cubic ft. per min. = $0.02281 \times 21 \times 1820$ =	873
Total surplus from Erieville reservoir =	947
do do Cazenovia lake reservoir =	1,051
do do Skaneateles do =	3,818
Total surplus from reservoirs, cubic ft. per min.	5,816

NOTE C.

The present supply of water to the canal, between Higginsville and Lodi, for July, August, September and October.

Under note B will be found the supply of Cazenovia lake and Erieville reservoirs, c. ft. per min. of both for 120 days =	4,761
Oneida creek, c. ft. per min., as per measurement July, 1859 =	1,500
Limestone creek, c. ft. per min., as per measurement of July, 1859 =	500
Butternut creek, c. ft. per min., as per measurement of July, 1859 =	500
Other sources, c. ft, per min., Pool's brook, Cowassalon creek =	320
Total supply 1859, c. ft. per min. =	7,581
By repairing structures on feeders an increased supply may be obtained for 1861, as follows: Oneida creek, 300; Limestone, 250; Butternut, 125; Pool's brook, 50; Cowassalon creek, 150 =	875
Total =	8,456

NOTE D.

The quantity of water required to supply the Oneida Lake Canal, or the amount used.

This canal is supplied from the Erie canal at Higginsville, which is 33½ miles from lock No. 47, and 24 miles from lock No. 46. It has seven locks, and an aggregate fall of 58 ft. to Oneida lake. The canal proper is 3¾ miles; creek navigation, 2¼. It became the property of the State under an act dated 11th May, 1840, which authorized the Canal Commissioners "to purchase the interest in the Oneida Lake canal and feeder, and the navigation of Fish creek." Stock to the amount of $50,000 was issued for the same, April 12, 1841.

A large quantity of water has been wasted on this canal the past ten years, caused by the leakage through old locks out of repair, and the quantity used will cover the amount required for contemplated new locks. It is believed that 20 lockages per day will be an ample estimate for the past and future trade of this canal, requiring for lockage water

canal, requiring for lockage water	166	c. ft.	per min.
Leakage through gates	650	do	do
Add 25 per ct. for flushing boats out of lock,	41	do	do
Evaporation on 3¾ miles, ⅓ inch from surface,	11	do	do
Filtration on 3¾ miles, 62½ cub. ft. per mile	233	do	do

Total c. ft. required and used on Oneida canal, 1,101

Of which 820 cubic ft. per min. is discharged into Oneida lake.

NOTE E.

The quantity of water delivered at Syracuse from the west end of the "long level;" lockage, leakage and waste at No. 47, Lodi.

1st. *Leakage.*—Experiments were made in 1848 on locks 60 and 61, built in 1840, and leaked as follows:

No. 60,	single,	10 feet lift	1,344	c. ft.	per min.
61,	do	8 do	1,220	do	do
Others,	do	varying from 450 to	1,100	do	do
Lock No. 47, 10½ feet lift: the gates are old and out of repair. It is deemed proper to allow for this lock, leakage			2,750	do	do

2d. *Lockage water, with total discharge.*—Cubic contents, 21,750 feet; 2 locks full to pass three boats; leakage per minute, 2,750; waste, ¼ of lockage water. Using the foregoing as a basis, the *total quantity* of water, *discharged* through the lock *upon* the *Syracuse level*, was, at different periods:

July to Oct., incl.,	1859,	daily avg.	101	lock'gs,	=4,021	c. ft.	per m.
Avg. for season,	1859,	do	93	do	=3,921	do	do
Largest month,	1859,	do	118	do	=4,172	do	do
do day,	1859,	do	177	do	=4,917	do	do
October 6th,	1860,	do	213	do	=5,430	do	do

It is believed safe for the future trade of the canal to provide water sufficient for 300 lockages, requiring 200 locks full of water per day. This will make the quantity passed upon the Syracuse level, from west end of long level: lockage-

water $= \frac{200 \times 21.750}{24 \times 60}$ ------------------	=3,020	c. ft.	per m.
Add $\frac{1}{4}$ for waste through culvert and flushing,	= 755	do	do
Leakage through lock gates, 10½ feet lift---	=2,750	do	do
Total cubic feet required per minute--	=6,525		
Greatest quantity used in any one day, 1859,	=4,917	do	do
do do in July to Nov. 1859,	=4,021	do	do
do do October 6th, 1860--	=5,430	do	do

Note F.

Deficiency between Higginsville and Lodi with present supply and trade, and the distance actually supplied east from lock No. 47.

Data:—

Under note C will be found the supply for 1859, c. ft. per min.		7,581
Under note C will be found the supply for 1861, c. ft. per min.		8,456
E	quantity passed for periods of lockages, at No. 47.	
H	loss c. feet per min. per mile,	198.17
E	quantity required at lock 47 for 300 lockages---------	6,525

The following tabular statement includes that portion between lock No. 47 and Higginsville, and not the supply of Oneida Lake canal:

Daily lockages at different periods.	Quantit's discharged into Syracuse level.	Present supply between Higginsville and lock No. 47.	Loss per mile per minute.	Formula.	Actual distance supplied east of lock No. 47.	Distance from latter point to Higginsville.	Deficiency between lock No. 47 and Higginsville.
	c. ft. per min.	c. ft. per min.	c. ft. per min.				c. ft. per min.
93, av. for season 1859....	3,921	7,581	198.17	$\frac{7,581-3,921}{198.17}$	18 2-3	14 5-6	2,940
101, July to Nov., 1859.....	4,021	7,581	198.17	$\frac{7,581-4,021}{198.17}$	18	15 1-2	3,072
118, largest month, 1859....	4,172	7,581	198.17	$\frac{7,581-4,172}{198.17}$	17 1-8	16 3-8	3,246
177, largest day, 1859......	4,917	7,581	198.17	$\frac{7,581-4,917}{198.17}$	13 1-3	20 1-6	3,996
213, Oct. 6, 1860...........	5,430	7,581	198.17	$\frac{7,581-5,430}{198.17}$	10 3-4	22 3-4	4,508
300, *for* future capacity....	6,525	7,581	198.17	$\frac{7,581-6,525}{198.17}$	5 1-3	28 1-6	5,598
With De Ruyter to present supply..................	6,525	11.472	198.17	$\frac{11.472-6,525}{198.17}$	24 1-2	9	1,707
As per Van Vleck's quantities, reported Dec. 5, 1859, with supply from De Ruyter reservoir added to his present supply...........	6,670	13.150	200.	$\frac{13.150-6,670}{200}$	32 4-10	1 1-10	220

NOTE G.

The supply that can be received from the proposed De Ruyter reservoir for 100 *days.*

1st. *Description.*—Is located in the extreme southwest corner of Madison county, town of De Ruyter, on the head waters of Limestone creek, and distant from the canal about 25 miles. There are a great many extensive mills upon the proposed outlet of this reservoir, which, with the present supply from the creek, are only able to operate about three-fourths the year—a very objectionable feature to its being made the outlet of a reservoir of such small capacity, as experience has demonstrated almost fatally on the Jordan level during the dryest period—withholding the water during the night by mill owners, for a strong head during the day.

2d. *Data.*—Area of pond = 626 acres; drainage basin, 12,000 acres; available head, $18\frac{1}{2}$ feet; fall of rain eight inches; ratio of drainage to fall of rain = 0.28; evaporation = twenty-four inches for one hundred days.

$$\text{Capacity} = \frac{626 \times 43.560 \times 18\frac{1}{2}}{100 \times 24 \times 60} \text{ - - - - - - - - - - - - - - } = 3,472 \text{ c. ft. per m}$$

Add natural flow :=

$$\left(\frac{(12{,}000\times 43.560\times\frac{8\times 0.28}{12})-(626\times 43.560\times\frac{24-8}{12})}{100\times 24\times 60}\right)=420 \text{ c. ft. pr. m.}$$

Total supply for 100 days . . . . = 3,891 do do

NOTE H.

The loss by evaporation, filtration, and waste, on a mile of enlarged canal, per minute.

The quantities as given for the old size of canal were determined by experiments :

Evaporation, old canal. 3 c. ft. ; enl'gd canal, ⅛ in. from surface = 14.25

Filtration, old canal, 63½ cubic feet : enlarged canal—

$(\frac{4}{3}4\sqrt{4}+28\sqrt{4}) : (\frac{4}{3}7\sqrt{7}+52\frac{1}{2}\sqrt{7}) :: 1 : 2.45$ the old.... =155.57

Waste, old canal, 9 cubic feet : enlarged canal—

$(42+26)^{\frac{4}{2}} : (70+52\frac{1}{2})^{\frac{7}{2}} :: 1 : 3.15$ the old.............. = 28.35

Loss per mile, exclusive of lockages, cubic feet per min. =198.17

Lockage and total loss between lock 47 and Higginsville=

$33\frac{1}{2}\times 198.17+6.525$ .... =13.179

Total supply (see note C)................................ = 7.581

Total deficiency between lock 47 and Higginsville, cubic feet per minute......................... = 5.598

NOTE I.

Present supply between Higginsville and lock No. 39 at Little Falls, 49 miles.

From Mohawk river at Rome.—As per measurements made July, 1859, by Wm. B. Taylor, Esq.	10,500 cub. ft. per min.		
From Black River canal.—Lock ten feet lift, ten lockages per day = $\frac{10\times 15000}{24\times 60}$ .... —	= 104	do	do
Leakage through gates...............	= 450	do	do
Average feeding through ½ valve of one opening	= 740	do	do
From Wood creek. — As per measurements made during dry season, 1854.	= 125	do	do
From Butts' creek.—As per measurements made during dry season, 1854.	=1,400	do	do

From Chenango canal.—Five feet lift first lock, eight lockages per day = $\frac{11\times8000}{40\times62}$ .... = 61 cub. ft. per min.

Leakage through gates .... = 350 do do

Average feeding through ½ valve, one opening .... = 500 do do

From Ilion creek.—As per measurements made August, 1856 .... = 800 do do

Total supply .... = 15,030 do do

Henry Van Vleck's report, dated December 5, 1860, made to the State, gave the above supply at cubic feet per min. 14,950.

NOTE J.

Deficiency between Higginsville and lock No. 39 *at Little Falls, for a trade of* 300 *lockages per day, and Oneida Lake canal for a trade of* 20 *lockages per day.*

Quantity required for Oneida Lake canal, given under note D .... = 1,101 c. ft. per min.

Utica weigh lock, 70 lockages per day and leakage .... = 1,375 do do

Lockage water and leakage at No. 39, 10½ feet lift (see note E) .... = 6,525 do do

Loss on 49 miles by evaporation, filtration and waste (see note H) .... = 9,800 do do

Total quantity used .... = 18,801 do do

Total quantity supplied (see note I) ... = 15,030 do do

Total deficiency .... = 3,771 do do

NOTE K.

With the present supply between locks 47 *and* 39 *and a trade of* 300 *lockages (requiring* 200 *locks full) per day, how far east of the former and west of the latter can the canal be supplied? the length of unsupplied portion, and amount required to supply the same.*

Data:

Present supply between lock 47 and Higginsville (see note C) .... = 7,581 cub. ft. per min.

Quantity required to pass lock 47 (see note E)........................= 6,525 cub. ft. per min.
Quantity required per mile (see note)=198.17 do do
Present supply between lock 39 and Higginsville (see note I) ....=15,030 do do
Quantity required to pass lock 39 (see note J)........................= 6,525 do do
Quantity required for Utica weigh lock (see note J)........................= 1,375 do do
Quantity required per mile (see note J)= 200 do do

Then the dist'ce supl'd east lock 47= $\left(\frac{7,581-6,525}{198.17}\right) = 5\frac{1}{3}$ miles.

Dist'ce supl'd w'st lock 39= $\left(\frac{15,030-6,525+1,375+1,101}{200}\right)$ =30 mls.

Distance unsupplied (from $18\frac{5}{6}$ miles east to $28\frac{1}{6}$ west of Higginsville...............................= 47 miles.

Quantity required for unsupplied portion, including Oneida Lake canal, 9,369 cubic feet per minute.

NOTE K.

The drainage basin of the Oswego river exceeds 7,500 square miles, equal to one-sixth the area of this State, and embracing the important lakes of Cayuga, Seneca, Canandaigua, Crooked, Onondaga, Cazenovia, Oneida, Skaneateles, and five smaller, Owasco, Cross, Otter, and Fish lakes. Its extent, east and west, on the Erie canal, is from a few miles west of Rome to the west line of Wayne county, and extreme southern limits to within ten miles of Elmira.

Mr. Richmond reports the increased head to Cayuga lake and Skaneateles lake reservoirs by the State of two feet on each. This will make the surplus from reservoirs as follows:

	c. ft. per min.	
Skaneateles lake, proportion for two feet..........	2,507	
Deduct loss in passing 17 miles through canal, same per centage of loss as former..................	965	
		1,542
Cazenovia lake, proportion for two feet...........	1,120	
Deduct loss in passing 21 miles through canal	537	
		583
Erieville same..............................		947
		3,072

Respectfully submitted.
S. H. SWEET.

Oneida Lake Canal.

Act, chapter 46, Laws of 1860, provides that when it shall become necessary to rebuild any of the locks on this canal, it shall be the duty of the Canal Commissioners to construct them of timber of the enlarged size. Under this law surveys and estimates were made, and the maps and plans submitted by the resident engineer on the 6th September last, locating all the locks, and reporting three of them as requiring immediate attention.

The estimated cost of rebuilding the seven locks of the enlarged size is	$80,120 00
Cost of rebuilding on old plan	54,761 00
Excess	$25,359 00

Tolls, Trade and Tonnage.

The whole number of tons carried one mile on the canals was 809,524,596, and on the railways 564,050,505. Compared with 1859 the mileage on the canals has increased 264,896,649, and that of the railroads 130,625,064. The increase on the canals, compared with 1859, in vegetable food was 885,503 tons, on the railroads 337,223. The tonnage on the railways and canals in merchandise has increased on both. The aggregate of this increase is 81,557 tons.

The following statement shows the shipment, by lake, of flour and grain from Chicago, in 1860, to United States ports on Lakes Erie and Ontario, and to Canadian ports on Lake Ontario:

Forwarded.	Flour.	Wheat.	Corn.	Oats.	Rye.	Barley.	Total bushels. red'ng flour to wheat.
	Bbls.	Bushels.	Bushels.	Bush.	Bush.	Bush.	
To Buffalo	116,322	6,865,417	8,554,978	464,339	96,495	46,471	16,600,310
To Oswego	500	2,238,657	1,764,794	41,036	......	10,887	4,057,874
To Ogdensburgh	31,575	273,953	681,104	13,078	......	......	1,126,010
To Dunkirk	......	......	100,789	......	......	......	100,789
To Cleveland	......	23,894	......	......	......	......	23,894
To other U. S. ports	5,861	7,188	64,340	79,912	......	2,970	183,715
To Collingwood, Canada	55,682	231,080	111,939	1,452	......	......	622,881
To Port Sarnia	1,380	368,877	248,126	......	......	......	623,903
To Kingston	......	780,174	185,422	......	......	......	965,596
To Port Colborne	2,225	721,502	1,294,466	5,487	18,191	......	2,050,831
To Prescott	......	......	40,763	......	......	......	40,763
To Montreal	5,196	207,316	......	......	......	......	233,296
To St. Catharines	......	99,358	......	......	......	......	99,358
To Toronto	......	......	16,322	......	......	......	16,322
Total	218,741	11,817,476	13,063,043	605,304	114,686	60,328	26,754,542

The above figures show that of the lake shipments from Chicago of more than twenty-six and three-quarter million bushels of grain, nearly twenty and three-quarter million bushels were sent to Buffalo and Oswego direct, Buffalo taking four to one over Oswego. Oswego, however, must have taken a very considerable portion of the Chicago shipments to Port Colborne, as well as shipments from other lake ports to the same point.

This statement shows the quantity of flour, and of wheat, corn, and other grains, first cleared at Buffalo, Oswego, and Phœnix, amounting to nearly forty-seven millions of bushels, which exceeds the shipments of any preceding year since the canals have been in operation by a very large amount :

	Flour.	Wheat.	Corn.	Oats.	Rye.	Barley.	Total bushels, red'ng flour to wheat.
	Bbls.	Bushels.	Bushels.	Bushels.	Bush.	Bushels.	
Buffalo	180,853	13,951,458	10,306,048	1,282,646	50,804	130,189	26,625,410
Oswego	421,032	6,786,606	4,538,341	401,514	165,687	1,201,101	15,198,409
Phœnix..........	412,093	1,193,249	1,171,625	168,013	29,212	472,372	5,094,936
Total	1,013,978	21,931,313	16,016,014	1,852,173	245,703	1,803,662	46,918,755

The following statements exhibit the comparative results for the periods above named. The tons carried each year, the tolls paid to the State, and the aggregate cost of transportation, tolls and freight, included in the average charges per ton :

	Tons carried.	Tolls.	Freight.	Aggregate of tolls and freight.	Av. pr. ton.
1847	2,869,810	$3,635,381	$4,818,152	$8,443,533	$2 94.56
1853	4,247,852	3,204,718	4,189,166	7,393,884	1 75.72
1860	4,650,214	3,009,597	5,039,853	8,049,450	1 73.12

In 1847, the toll paid to the State was 43.06 per cent. of the whole cost of transportation. In 1853, 43.34 per cent. and in 1860, 37.39 per cent.

	No. of tons moved one mile.	Toll and freight.	Av. pr. ton a mile.
In 1847..............	464,347,506	$8,443,533	$0 01.8
In 1853..............	626,025,883	7,393,884	0 01.2
In 1860..............	809,524,450	8,049,450	0 01.0

The canal prices on through freights, approximate nearer the rail charges than is shown by the above general averages.

The difference in favor of the canals in 1853 was $3.35 2-100 per ton, equal to $335.02 on 100 tons from Albany to Buffalo. In 1860 this difference was $2.27 19-100 per ton, equal to $227 19 on 100 tons, sent in the same direction. The merchandise tonnage of the road during the season of navigation, from October 1, 1859, to September 30, 1860, omitting five months of the fiscal year, was 120,526 tons. On this amount of tonnage the shippers paid $266,823.01 94-100 more freight than they would have done if sent by the canals.

Taking the average charge up and down, we see it is now very nearly one-fourth of what it was in 1840, and half of what it was in 1850. While the charge on 100 tons, up and down, has fallen from four to one, and from two to one, the tons delivered from the Erie canal—the business—has increased from nearly one to five, and one to two.

The cost of transportation seems to have gone down regularly with the increase of tonnage. The average cargo of the boats has doubled since 1850, and the lockages have decreased 6,000 since that time. With an addition of 905,202 tons to the tide water deliveries from the Erie canal in 1850, the average charges were 50 per cent. less.

Auditor Benton concludes his report on tolls, trade, &c., as follows:

"The conflict of political partizanship has not been the least evil encountered during the last thirty-five years of intense struggle which has been going on while our public works were moving to an enlargement and completion. The canals have forced themselves into public confidence, and we have the gratifying spectacle of seeing that the commercial tonnage borne upon their imperial waters in 1860, was a little more than 70 per cent. of the whole import and export tonnage of the United States.

"The year 1860 may be looked upon as the most remarkable period in this history of our canals. Increased tonnage, increased revenue, and decreased expenses, which in the aggregate, or singly, have no parallel since the waters of the great lakes and the Atlantic ocean were mingled in front of our own and the nation's commercial emporium."

Summary showing an annual excess of exportations from Canada to the United States, above those to all other countries together, from December 31, 1854, *to January* 1, 1861.

Years.	Total exports from Canada to the United States, Great Britain & all other countries.	Exports from Canada to the United States.
1855	$28,108,461	$20,002,290
1856	32,047,016	20,218,653
1857	27,006,624	14,762,641
1858	23,472,609	13,373,138
1859	23,102,378	13,922,314
1860	34,631,890	20,698,398
Total exports	$168,368,978	$97,955,504
Total exports to the United States	97,955,504	
Amount of exports from Canada to the United States, above those to all other countries together, for the last six years	$70,413,474	

Laws passed during the year.

Interest on canal drafts passed April 17, 1860, chap. 490. This law authorized the interest to be paid on all drafts which were entitled to interest under the law of 1859, chap. 149; interest to be paid until notified by the Auditor that he is prepared to pay the draft.

Sections 6, 7, 8, 9, 10, 11, 12, of the law creating the Contracting Board, repealed.

Repairs by Contract.

The following statement shows the names of the canals, the length in miles of each division of the Erie canal, and of the other canals, and the number of sections and locks on each, and the prices now paid under existing contracts.

CANALS.	Miles in length.	No. of Sections.	No. of locks.	Repair contracts 1st October, 1860.
Erie canal, Eastern division	136	5	52	$60,419
do Middle do	78	3	6	15,218
do Western do	155	5	20	41,167
Champlain canal and Glens Falls feeder	78	3	37	22,259
Oswego canal	38	--	--	-----
Oneida river improvement, Baldwinsville canal, and Seneca river towpath	38	2	18	15,699
Cayuga and Seneca canal	23	1	11	3,574
Chemung canal and feeder	39	1	52	13,475
Crooked Lake canal	8	1	27	3,869
Chenango canal	97	3	114	22,000
Genesee Valley canal extension, and Dansville side cut	125	3	115	26,133
Oneida Lake canal and feeder	7	1	7	2,375
Black River canal	49	2	109	15,984
Black river improvement	42½	1	1	3,800
	911½	31	569	$245,972

The cost of repairing breaks on all the canals in 1858, was $144,394.20; in 1859, $31,003.95; and in 1860, $15,240.39.

Estimated Cost to complete the Canals, by Auditor Benton.

When the amended third section of the seventh article was projected in 1853, the estimated cost of completion, in addition to the $1,500,000 raised and applied under the canal revenue certificate law, was $9,000,000. The canal revenue certificate debt must be either excluded from or included in the cost of completion. The Auditor adopts the latter course, and thus fixes the estimated cost, in 1854, of enlarging and completing the canals, as determined by the amended third section, at $10,500,000, and states the amount as follows:

Borrowed under the amendment, to complete the public works and pay off the canal revenue certificates	$10,500,000 00
Applied from premiums on loans	1,482,192 67
Received from tax of 1857, and applied to construction	1,406,067 56

Received from tax of 1859, and applied to construction	$707,613 33
Floating debt loan	2,500,000 00
To be received on the taxes of 1860, and applied to complete	1,400,000 00
Received from temporary loan	200,000 00
Total amount of cost to enlarge and complete	$18,193,873 66

Sums raised and applied to pay interest :

Borrowed prior to 1858, to pay interest	$1,500,000 00
Received from the tax of 1858, to pay interest	680,000 00
Received and to be received from the tax of 1860, to pay interest on the debt estimated	1,575,000 00
	$3,755,000 00

We see by the foregoing exhibit, that the cost to complete is double the estimate fixed in 1854.

Chenango Canal Extension and the Coal Trade.

State Engineer and Surveyor Richmond reported Jan. 10, 1860, to the Senate, the estimated cost of the Chenango canal extension from Binghamton to the State line, near Athens, $38\frac{48}{100}$ miles at $829,488.21. The survey was made under act chapter 88, Laws 1859.

Orville W. Childs was appointed, by Mr. Richmond, chief engineer, who submitted an able report of 50 pages, from which the following is taken, which presents a complete and thorough investigation of the coal trade as follows:

The following statement, compiled mainly from the tonnage reports on file in the Canal Department, shows the number of tons (2,000 pounds), the estimate value per ton, and the total value of the coal shipped at each office ; and total tons, average value per ton, and total estimated value of the coal shipped at all of the offices on the State canals during each year from 1849 to 1858 inclusive.

TABLE A.

	1854.			1855.			1856.			1857.			1858.		
	Tons shipped at	Price per ton.	Value at each office.	Tons shipped at	Price per ton.	Value at each office.	Tons shipped at	Price per ton.	Value at each office.	Tons shipped at	Price per ton.	Value at each office.	Tons shipped at	Price per ton.	Value at each office.
New York	9,225	......	$26,898	9,946	$5 00	$49,732	11,565	$5 00	$57,824	15,277	$5 00	$76,390	13,589	$5 00	$67,943
Albany	26,843	$6 00	161,061	23,409	6 00	140,453	31,204	5 00	156,019	27,843	5 00	139,217	17,221	5 00	86,107
West Troy	56,703	6 00	340,213	62,281	6 00	373,686	99,923	5 00	499,614	72,070	5 00	360,347	62,223	5 00	311,113
Schenectady	35	5 00	175	110	6 00	660	509	5 00	2,546	1,021	5 00	5,105	37	5 00	185
Fultonville	720	6 00	4,320	34	6 00	202	71	6 00	424	....	......	....	499	5 00	2,494
Little Falls	173	5 00	865	172	6 00	1,032	399	6 67	2,662	626	5 00	3,130	53	4 51	239
Utica	1,441	6 00	8,644	1,958	6 00	11,752	1,345	5 00	6,723	1,004	6 00	6,027	3,338	5 00	16,689
Syracuse	48	6 00	288	13	6 15	80	263	6 00	1,578	193	6 00	1,158	14,428	5 00	72,138
Jordan	....	......	....	23	6 00	138	....	......	....	....	......	....	8,780	4 00	35,121
Montezuma	42,950	5 00	214,748	52,682	6 00	316,094	....	......	....	....	......	....	56	4 00	223
Lyons	....	......	....	....	......	....	....	......	....	75	5 00	375	....	......	....
Palmyra	117	5 00	585	....	......	....	155	5 00	775	....	......	....	....	......	....
Rochester	5,076	6 00	30,456	2,473	5 00	12,362	2,259	5 00	11,294	1,983	5 00	9,917	2,533	5 00	12,663
Brockport	2	10 00	20	78	10 00	782	35	......	700	12	6 00	72	....	......	....
Albion	5	8 00	40	....	......	....	36	7 00	252	75	5 00	375	715	4 00	2,860
Medina	....	......	....	....	......	....	54	6 72	363	....	......	....	....	......	....
Lockport	....	......	....	2	6 00	12	....	......	....	....	......	....	....	......	....
Black Rock	....	......	....	70	6 00	420	....	......	....	....	......	....	....	......	....
Tonawanda	85	6 00	510	....	......	....	....	......	....	3	5 00	15	....	......	....
Buffalo	14,657	6 00	87,942	10,888	7 00	76,216	9,810	6 93	68,157	14,026	5 00	70,130	16,259	4 50	73,167
Waterford	9,089	6 00	54,536	16,007	6 00	96,044	8,258	6 00	49,547	37,777	4 00	151,108	51,706	5 00	258,530
Schuylerville	118	7 00	826	126	7 00	882	....	......	....	64	6 00	381	....	......	....
Whitehall	82	6 45	530	....	......	....	....	......	....	....	......	....	....	......	....
Fort Edward	....	......	....	....	......	....	....	......	....	....	......	....	379	5 00	1,894
Salina	....	......	....	....	......	....	1	4 00	4	....	......	....	....	......	....
Phœnix	....	......	....	....	......	....	731	5 00	3,655	759	5 00	3,795	688	5 00	3,443
Oswego	835	7 00	5,845	....	......	....	736	5 00	3,680	80	6 00	480	303	4 70	1,424

TABLE A.—Continued.

	1854.			1855.			1856.			1857.			1858.		
	Tons shipped at	Price per ton.	Value at each office.	Tons shipped at	Price per ton.	Value at each office.	Tons shipped at	Price per ton.	Value at each office.	Tons shipped at	Price per ton.	Value at each office.	Tons shipped at	Price per ton.	Value at each office.
Seneca Falls	9,792	$5 00	$48,960	11,735	$6 00	$70,409									
Geneva	526	6 00	3,157	7	6 00	42				5,129	$6 00	$30,774	85	$3 40	$289
Ithaca							71,150	$4 00	$284,600	60,169	4 00	276,676	21,225	4 00	84,900
Horseheads	381	3 50	1,332	1,874	6 00	11,241	23,836	4 00	95,342	39,151	4 50	176,181	55,522	4 00	222,089
Corning	56,645	3 50	198,258	55,242	6 00	331,452	59,913	3 25	194,717	53,036	2 40	127,287	30,255	3 00	90,765
Penn Yan				24	5 00	120				407	5 00	2,034	465	5 00	2,323
Hamilton													3	4 33	13
Oxford							134	5 00	670	470	4 80	2,256			
Binghamton	37,713	4 00	150,850	41,405	3 75	155,272	45,770	4 00	183,080	44,402	3 00	133,206	34,497	3 00	103,490
Scottsville	241	6 00	1,446	205	6 00	1,230	119	8 00	952	74	6 00	444	315	6 00	1,895
Mount Morris				5	10 00	50									
Dansville				3	6 00	18				3	5 66	17			
Baldwinsville				2	6 00	12									
Higgins							67	6 00	404				2	5 00	10
Totals	273,502		$1,342,505	290,775		$1,650,393	368 343		$1,625,582	384,729		$1,576,897	335,176		$1,452,007

The Delaware, Lackawanna and Western Railroad and Coal company, now send coal from their mines at Scranton, on their road, to the N. Y. & Erie railroad at Great Bend, thence on the latter road to the Chenango canal and the Syracuse & Binghamton railroad, at Binghamton, and to Oswego, and over their railroad, the Cayuga & Susquehanna, to Ithaca, at the head of Cayuga lake.

Of this coal, the quantity shipped the past season on the Chenango canal, at Binghamton, as ascertained from the collector of canal tolls at that place, was 56,288 tons; and on the Syracuse & Binghamton railroad to Syracuse, about 60,000 tons; the quantity forwarded from Binghamton to Oswego, and across to Ithaca, the Cayuga lake, &c., though considerable, is not ascertained.

This being the principal if not the only anthracite coal now distributed along these several thoroughfares, the citizens are without the benefit of competition, and prices the past season ruled higher in that portion of the Susquehanna valley and along the southern and middle portion of the valley of the Chenango canal, than at several points on the Erie canal, where this coal comes in competition with others from the Wyoming valley, and other sources. In confirmation of this remark, a single instance may be specified. Coal, from the mines at Scranton, is sold at Binghamton at the rate of $3.50 to $3.75 per ton by the car load, and $4 to $4.25 per single ton. At Syracuse, by the larger quantity, for purposes of manufacturing salt, the price per ton has been $3 for large lump, and $3.10 for large egg, at the railroad companies' docks, delivered in canal boats for distribution among the several works; for domestic purposes, the prices at Binghamton and Syracuse appear to be about the same, notwithstanding it is delivered at the latter place at an expense of nearly $1 per ton greater than at the former.

Of the coal from the mines at Scranton, shipped on the Chenango canal at Binghamton, the past season, a small quantity reached the Buffalo market, while of that from the Barclay mines shipped at Towanda, a portion reached Binghamton, via the North Branch canal, the Junction, Chemung, Cayuga and Seneca, Erie and Chenango canals.

As the Barclay mines lie nearer to the Chenango extension than any others, of bituminous coal, the quantity that would reach the eastern market through this very direct channel, would probably be larger from this than from any other bituminous mines; this quantity would further depend on the character of the coal and the facilities of mining and delivering into canal boats at Towanda.

With reference to arriving at more reliable conclusions, or aiding the judgment in determining the prospective relative ability, based on the profits, of the several companies owning coal mines, to deliver coal to the docks at Albany, the following table is given, showing the name of the place at which coal is shipped by canal, the minimum selling prices established by the several companies respectively, at said places (excepting that at Hawley); the length of railway transit from the mines to the places of transfer to canal boats severally; the cost of railway transit; amount reserved for value of coal in mines, cost of mining, &c., and for profits; distances and cost of transport from the several places to, and the total cost per ton at Albany:

Names of places at which coal is shipped by canal.	Minimum selling prices at places of shipment (per ton.)	Length of railway transit from the several mines to the places of shipment (miles.)	Cost of railway transit (per ton.)	Leaving for value of coal in mines; cost of mining and for profits (per ton.)	Distance from the several places to Albany (miles.)	Cost of water transit in 1859, including tolls (per ton.)	Total cost per ton, in Albany.
Pittston	$1 10	....	......	$1 Estim'd	via exten. 341	$2 56	$3 66
Towanda........	1 75	16	17c	1 58	do do 266	1 87	3 62
Binghamton.....	2 55	62	62c	1 93	via Utica 207	1 45	4 00
Hawley.........	1 98	45	40c	1 58	via Rond't 160	1 90	3 88

The cost at Albany, as shown in the statement, is, of course, varied by the difference in cost of transport from the several points named, as well as by the value of coal fixed by the proprietors in the mines; which governs the minimum selling price at the several points of transfer, from railway cars to canal boats.

At Pittston, the selling price of prepared coal is $1.10 per ton; to this is added, in the table, for transportation to Athens, 81 cents, the price uniformly paid, as it is understood, the past season. From Athens to Albany the distance is reckoned, via. the Extension, Chenango and Erie canals, and in the statement the same price is allowed, or in proportion to the distance, as was paid the past season on the present route, via. Elmira, Montezuma, &c., which was a fraction over 7 mills per ton per mile. By this route the benefit of the navigation of a longer distance of enlarged canal would be realized; but an offset to this is found in the greater hazard and expense of passing the Seneca lake, as compared to an equal distance of canal; and the higher toll charged on the Junction canal, which is 15 cents per ton for a distance of 18 miles, while, on an equal length of State canal, it would be one cent and 8 mills, making a difference in this respect against the economy of this route of a fraction over 13 cents per ton.

The distance, then, from Athens to Albany, being 250 miles, 7 mills per ton per mile would amount to $1.75, and including that from Pittston to Athens, would be $2.56, and adding selling price at Pittston, would give for the whole cost at Albany, $3.66 per ton. At Towanda, the selling price fixed by the company, as before stated, is $1.75; the transportation to Albany, 266 miles, at 7 mills, amounts to $1.87; these added give as the actual cost at Albany $3.62, and by deducting 17 cents, the cost of railway transit, leaves for coal in the mines, cost of mining, &c., and profits $1.58, or about 58 cents more than is charged for the same items at Pittston. So, at Binghamton, the minimum selling price being $2.55, which added to the cost of transportation on the canal at the same rate for 207 miles, gives $4 as the cost per ton at Albany; but deducting from this minimum price at Binghamton, 62 cents for the cost of railway transit, leaves for value of coal in the mines, mining, &c.; and profits, $1.93, or 83 cents greater than at Pittston.

The Pennsylvania Railroad and Coal company's road extends from their mines at Pittston, 45 miles, to Hawley, on the Delaware and Hudson canal; it has an ascent and descent of about 2,250 feet, which is overcome by 22 planes, operated by stationary steam power, and by gravity. From Hawley the coal is taken on the Delaware and Hudson canal to the Hudson river, at Rondout, thence to market in either direction on that river. The toll charged for coal on that canal is understood to be variable, and is half of the excess of the market price at Rondout, above $2.50. This market price having averaged about $3.70, half the excess would amount to 60 cents per ton.

The price represented in the table as the minimum at Hawley, was not fixed by the Penn. R. R. & Coal Co., whose coal alone is transhipped at this point, but was fixed by allowing that company the same amount for the value of their coal in the mines; for mining, &c., and for profits, as is claimed by the Barclay R. R. & Coal Co., for the same items, and allowed them in the statement, and adding thereto 40 cents per ton, or a fraction less than 9 mills per ton per mile, a sum understood to be the exact cost of transporting their coal 45 miles over their road; also 80 cents per ton, the uniform charge the past season for freight (exclusive of toll,) from Hawley to Rondout, 99 miles; for tolls on the Delaware and Hudson canal, 60 cents, the average of the past season, and for transportation on the Hudson river about 61 miles, to Albany, 50 cents, the uniform charge on this portion of the distance. Making, together, the cost at Albany, as stated in the table, $3.88 per ton. The quantity sent to market the past season by this company is not ascertained.

To further illustrate the table, or the relative ability of the several companies to sustain a competition in the Albany market, based upon profits, the value of coal at Albany is assumed at $4.50 per ton; this would leave to the several companies for the value of their coal in the mines, for the expense of mining, &c., and for profits, the sums shown in the last column of the following table:

COAL FROM	Assumed value in market p'r ton.	Cost in market per ton.	Profits on sales per ton.	Profits includ'g value in mines, cost of mining, &c., per ton.	Total profits including value in mines, cost of mining, &c., per ton.
Pittston	From $4 50	Deduct $3 66	84 cents.	Add $1 00	= $1 84
Towanda	" 4 50	" 3 62	88 "	" 1 58	= 2 46
Binghamton	" 4 50	" 4 00	50 "	" 1 93	= 2 43
Hawley	" 4 50	" 3 88	62 "	" 1 58	= 2 20

Thus showing if the expense of transportation on the several routes is correctly calculated, (and being based mainly on the actual prices paid the past season, it is not understood how they can be relatively or materially in error,) then the coal from Towanda, Pittston, or the Wyoming Valley, via. the Chenango extension, &c., can compete successfully with that from Pittston, and Scranton, via. Hawley and Binghamton.

In endeavoring to approximate, as nearly as may be, a correct estimate of these quantities, the following table has been prepared, mainly from official tonnage reports of the Canal Department, showing the tonnage, tolls, and estimated value of the coal and iron ore moved on the Chenango canal, the proportions of their tonnage tolls, &c., to the whole tonnage and tolls, &c.; also, in a more condensed form than is given in the former table, the total tonnage and value, and the total tolls received for coal on all the State canals from 1849 to 1858, together with other statistics in relation thereto, as indicated in the heading of the several columns.

TABLE B.—CHENANGO CANAL.

YEAR.	COAL.				TOLLS.			COAL, ORE, STONE, LIME, CLAY, LUMBER, TONNAGE, TOLLS, &C. &C.						
	Total coal shipped at Binghamton.	Total coal shipped at Binghamton, Oxford and Hamilton.	Value of coal at places of shipment (per ton.)	Estimated total value of coal at places of shipment.	Total tolls received for coal at Binghamton, Oxford & Hamil'n.	Total tolls received on all freight at Binghamton, Oxford & Hamilton.	Ratio of tolls received at the three offices on coal to the whole toll received at these offices.	Total coal left on the Chenango canal.	Total stone, lime and clay cleared at Binghamton, Oxford & Hamilton (tons.)	Total tolls received on stone, lime and clay, at Binghamton, Oxford and Hamilton.	Total tons iron ore arrived at Binghamton.	Total tolls received on iron ore that arrived at Binghamton.	Total tons of lumber shipped at Binghamton, Oxford and Hamilton.	Total tolls rec'd on lumber shipped at Binghamton, Oxford & Ha'n.
							Per cent.							
1849	....	....	....	....	....	$15,792	....	....	....	....	....	....	....	....
1850	6	6	....	....	....	16,392	....	524	....	....	....	....	22,920	$6,828
1851	432	432	$4 00	1,728	19	13,871	....	513	3,180	$408	....	....	18,833	5,492
1852	11,418	11,418	3 00	33,190	1,057	11,901	8.8	3,352	4,438	584	562	49	15,012	2,932
1853	33,259	33,259	3 50	116,407	3,019	15,271	19.7	18,120	3,597	579	14,119	1,242	15,239	3,546
1854	37,713	37,713	4 00	150,850	3,893	14,498	26.8	7,628	3,263	341	23,455	2,064	9,934	2,197
1855	41,406	41,406	3 75	155,272	4,251	15,875	26.8	13,455	5,390	381	23,470	2,065	9,365	2,256
1856	45,770	45,904	4 00	183,750	4,471	16,003	27.9	15,897	6,289	441	27,139	2,388	7,186	1,897
1857	44,402	44,872	3 01	135,462	4,495	15,429	29.1	11,633	3,074	249	29,002	2,552	6,667	1,665
1858	34,497	34,500	3 00	103,503	3,537	12,406	28¼	2,203	3,183	214	21,274	1,872	7,044	1,779
1859	56,288	56,702	....	....	5,533	....	....	....	....	....	18,730	1,648	....	....

TABLE B.—CHENANGO CANAL—Continued.

YEAR.	COAL, ORE, STONE, LIME, CLAY, LUMBER, TONNAGE, TOLLS, &C., &C.							COAL FROM OTHER STATES.	COAL AT HUDSON RIVER, TONNAGE, VALUE, &C.			
	Total tons of coal, ore, stone, lime and clay shipped at Binghamton, Oxford and Hamilton.	Total tolls received on coal, ore, lime, &c., shipped at Binghamton, Oxford and Hamilton.	Ratio of tonnage of coal, ore, stone, lime, &c., to the whole tonnage, at the three offices.	Ratio of toll received on coal, &c., at Binghamton, Oxford and Hamilton, to whole toll received at these offices.	Total tonnage of all freight on the Chenango canal, cleared at Binghamton, Oxford and Hamilton.	Total estimated value of all freight at the three offices.	Total tolls received at all the offices.	Total coal that arrived at Buffalo and Tonawanda from other States.	Total coal ascending Erie and Champlain canal from tide water (tons).	Total tons coal arrived at Hudson river from canals.	Estimated value per ton of coal arrived at Hudson river from canals.	Estimated total value of coal in Albany and Troy arriv'd at the Hudson river from the canals.
			per cent.	per cent.								
1849	....	....	....	....	36,557	$1,106,791	$25,721	1,495	37,531	12,585	$4 50	$56,633
1850	....	....	....	....	41,892	1,174,065	24,627	3,999	46,722	16,073	5 66	90,951
1851	....	....	....	....	40,307	1,078,403	22,022	4,230	67,204	13,055	4 50	58,753
1852	16,418	$1,690	36¼	14.2	44,939	1,440,623	18,988	5,898	69,923	7,411	5 00	37,052
1853	50,975	4,840	66.6	31.7	76,538	1,999,803	22,439	10,413	95,333	15,137	5 00	75,685
1854	64,431	6,298	83¼	43.4	77,142	1,556,623	21,494	15,548	92,801	42,902	8 98	385,415
1855	70,266	6,698	78.6	42.2	89,390	1,981,774	21,831	10,338	95,746	18,033	5 95	107,456
1856	79,332	7,300	75.2	45.6	105,502	2,284,391	21,818	9,730	142,692	27,079	5 00	135,397
1857	76,948	7,296	79¼	47.3	96,722	2,395,088	20,277	14,094	116,211	14,080	5 00	70,400
1858	58,957	5,623	81.2	45.3	72,526	1,856,266	16,916	16,389	93,070	14,736	5 00	73,681
1859	....	....	....	....	....	....	....	....	....	....	....	....

TABLE B.—CHENANGO CANAL—Continued.

YEAR.	COAL LEFT AT NEW YORK FROM ERIE AND CHAMPLAIN CANALS, WITHOUT BREAKING BULK AT TROY AND ALBANY.			Total movement of coal on all of the canals.	Estimated value per ton.	Total estimated value.	Total tolls received on coal on all the canals.	Ratio of tonnage of coal on the Chenango canal to the whole tonnage of coal on all of the canals.	Ratio of tolls received for coal on the Chenango canal to the whole toll received for coal on all of the canals.	Ratio of annual increase of the amount of coal shipped on all of the canals since 1849.
	Total tons.	Value per ton.	Estim'd total value.							
									per cent.	per ct.
1849	275	$4 50	$1,238	70,326	$4 41	$310,263	$13,824	......	......	......
1850	......	......	......	80,127	8 10	650,644	15,940	.0003	......	13.9
1851	1	5 00	7	112,277	4 40	493,745	15,818	.0038	0.1	40.1
1852	16	5 00	78	145,296	4 76	692,581	19,054	.0786	5½	29½
1853	482	5 00	2,408	225,507	4 85	1,092,836	26,158	.1474	11½	55.2
1854	3,764	4 00	15,085	273,502	4 90	1,342,505	40,389	.1377	9.6	21.2
1855	739	5 00	3,694	290,775	5 67	1,650,393	40,113	.1424	10.6	6.3
1856	473	5 00	2,366	368,343	4 41	1,625,582	42,079	.1246	10.6	26.6
1857	252	5 00	1,260	384,729	4 10	1,576,897	43,750	.1166	10.2	4.4
1858	1,261	5 00	6,307	335,176	4 33	1,452,007	32,783	.1029	10.8	......
1859	......	......	......	......	......	......	......	......	......	......

From the foregoing statement, it appears that there was an annual increase in the quantity of coal shipped at Binghamton, (all by railroad,) from the Scranton mines, up to 1857, and that in 1858 it fell off to nearly the amount of 1853; and that in 1859 the quantity very largely exceeded that of any former year. Also, that previous to 1857, about one-third of the coal shipped at Binghamton was left on the Chenango canal, and of that shipped in 1857 and 1858, only about one-sixth was left; and that the proportion of tolls on coal received at Binghamton, Oxford, and Hamilton, from 1854 to 1858, averages about 28 per cent. of the whole tolls received at these offices.

The iron ore was from the Clinton beds, and, as understood, was all taken to the Scranton iron works, in Pennsylvania. The annual average quantity that arrived at Binghamton during the six years preceding 1859 was 23,076 tons, and it fell off in 1859 to 18,730 tons, while the coal shipped at Binghamton, Oxford, and Hamilton, in 1859, was greater than the average of the preceding six years, 17,093 tons, and greater than in 1858 by 22,202, an increase of over 64 per cent.

As deduced from table B, the average ratio of the tonnage of coal, limestone, &c., and ore shipped at Binghamton, Oxford, and Hamilton, is $71\frac{6}{10}$ per cent. of the whole tonnage reported at these offices, and the average ratio of tolls received on the coal, limestone and ore shipped at the three offices above named for the five years preceding 1859, is $44\frac{7}{10}$ per cent of the whole toll received at the same offices.

The proportion of the tonnage of coal on the Chenango canal, to the tonnage of coal on all of the canals, appears to have been about 14 per cent. in 1854 and 1855, and that it gradually diminished to about 10 per cent. in 1858, while the proportion of tolls received for coal on the same canal to the tolls received for coal on all the canals, has fallen from $11\frac{1}{2}$ per cent., in 1853, to $9\frac{6}{10}$ per cent. in 1854, when it increased gradually to $10\frac{8}{10}$ per cent. in 1858; this, while it shows a relative diminution in the quantity from the Chenango canal, at the same time shows an increase in the distance moved, and a market more widely extended, as compared with that of the coal of the other canals, or that from other sources.

Some general ideas of the probable future increase in consumption of coal, and the prospective quantity that would be sent forward from the Barclay and Wyoming Valley mines, may be obtained by observing the increase in the quanty sent forward from other mines during the ten years from 1849 to 1858, inclusive, as shown in the following extracts from tables reported in vol. 15, No. 33, of the American Railroad Journal; also the increase of the three years from 1854 to 1856, inclusive, over the three previous years, and the increase of 1858 over 1857, and the per centage of increase.

TABLE C.

Years.	Quantity deposited at Philadelphia from the Schuylkill region by the Schuylkill canal and the Reading railroad.			Quantity of coal brought from the Lehigh region, and from the Wyoming valley to the Delaware river at Easton, by the Lehigh Navigation and the Lehigh Valley railroad.			Quantity of coal received at New York from the Delaware by the Morris canal, and from the Lackawanna valley by the Delaware, Lackawanna and Western railroad.		Amount of coal received at Rondout from Pittston, by the Pennsylvania Co.'s railroad, and from Carbondale and Upper Lackawana valley, by the Delaware and Hudson Comp'ny's railroad and canal.	
	By canal.	By railroad.	Total.	From the Lehigh region.		From Wyoming valley by railroad and canal.	Morris canal.	Delaware, Lackawana and Western railroad.	Pennsylvania Company's railroad.	Delaware and Hudson Co.'s railroad and canal.
				By canal.	By railroad.					
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1840	....	....	....	225,318	....	....	....	....	....	....
1841	....	....	....	Not reported.	....	....	....	....	....	....
1842	491,602	49,902	....	do	....	....	....	....	....	....
1849	Not rep'td sep.	Not rep'td sep.	1,605,126	do	....	19,590	114,017	....	....	454,240
1850	do	do	1,712,607	690,456	....	32,156	104,323	....	fi't op'd 111,014	441,403
1851	do	do	2,184,240	964,224	....	25,072	148,262	....	316,017	479,078
1852	800,038	1,650,912	2,450,950	1,072,136	....	41,890	190,277	....	426,164	497,105
1853	888,695	1,582,248	2,470,943	1,054,309	....	26,235	235,805	....	512,659	494,327
1854	907,354	1,987,854	2,895,208	1,207,186	....	39,202	284,606	....	496,648	440,944
1855	1,105,263	2,213,292	3,318,555	1,275,950	First op'd 9,063	50,209	299,682	First open'd217	504,803	565,460
1856	1,169,453	2,088,903	3,258,356	1,186,230	165,740	44,270	311,929	121,113	612,500	499,650
1857	1,275,988	1,709,692	2,985,680	900,314	418,236	37,967	298,011	295,953	543,873	480,677
1858	1,323,804	1,542,646	2,866,450	908,800	471,930	69,644	345,725	538,247	630,056	347,873
	Opened 1822, (1,480 tons.)	Opened 1841.	....	Opened 1820, 365 tons.)	Opened 1855.	First repo'td 1846, (5,886)	First reported 1849.	Opened 1855.	Opened 1850.	Opened 1829. (7,000 tons.)
Total tons in 1851, '52, '53........			7,106,133	3,090,669	....	93,197	574,344	....	1,254,840	1,470,510
do 1854, '55, '56........			9,472,119	3,668,466	174,803	133,711	896,217	121,330	1,613,951	1,506,054
Increase of the three latter over the three former years			2,365,986	577,797	174,803	40,514	321,873	121,330	359,111	35,544
Per cent of increase of the three latter over the three former years..			33 3-10	18 6-10	....	43 5-10	56	....	28 6-10	2 4-10
Difference in tons forwarded in 1857 and 1858..........			Decrease 119,230	Increase 8,486	Increase 53,694	Increase 31,677	Increase 47,714	Increase 242,294	Increase 86,183	Decrease 132,804
Per cent of difference of 1857 and '58			3 9-10	1	12 8-10	83 4-10	16	81 8-10	15 8 10	27 6-10

The average per cent. of increase of the whole movement in the years 1854, '55 and '56, over the three previous years, was 29 4-10.

Recapitulating the items and estimated amount that would form part of the probable increase of business on the canals of this State, from such extension, and calculating the tolls at the rates at present established for the several distances, to which each item would be entitled, gives the following results:

Coal.—100,000 tons, increased as above, $37\frac{8}{10}$ p. ct.=137,800 tons.	
Toll from State line to Utica, 135½ miles, at one mill per ton per mile	$18,671 90
Toll on 500,000 tons from Utica to the Hudson river, 105 miles, at one mill per ton per mile	5,250 00
Iron ore.—Toll on 55,000 tons from Clinton to State line, 126½ miles, at one mill per ton per mile	6,957 50
Lime, &c,—Toll on 3,677 tons from Oriskany Falls to State line, 116½ miles, at two mills per ton per mile	856 74
Boards and scantling.—Toll on 4,500,000 feet, board measure, from State line to Albany, 245 miles, at five mills per M. feet per mile	5,512 50
	$37,248 64

The rapidly increasing traffic in coal, and the prospective increase in its future demand, together with the long distances that this article and that of lumber would, after passing the Extension canal, be moved on the other State canals, also the long distances that iron ore and limestone would be so moved, not only justifies the foregoing calculations and the conclusions arrived at in regard to the amount of business that would be done upon it, and the toll it would produce, but should attach to it a degree of importance that could only be appreciated by a knowledge of its location, the relation it would sustain to other canals as a connecting link, and of the large amount of coal it would be the medium of annually introducing for consumption in this State.

Respectfully submitted.

O. W. CHILDS, *Civil Engineer.*

PROGRESS OF THE CANALS IN 1861.

Hon. Van R. Richmond reported the cost to complete the enlargement of the Erie canal, exclusive land damages, after Sept. 30, 1861	$188,255 71
Lateral canals, including $50,000 for Champlain canal locks	133,306 52
Engineering and contingencies	68,437 77
Total	$390,000 00

Mr. Richmond estimated that $75,000, exclusive of the above, would be required to bottom out the Erie canal at various points.

"The amount work done, and the cost of engineering, for the last seven years, and the percentage on the whole amount of work done in each year, is shown in the table below:

Year.	Work done.	Cost of engineering.	Per centage on work done.
1854	$873,713 84	$144,136 43	$16.5
1855	3,524,898 03	211,982 73	6
1856	3,864,014 95	245,618 48	6.4
1857	2,862,923 07	182,991 05	6.4
1858	1,668,606 55	130,471 26	7.8
1859	1,022,689 19	89,728 85	8.8
1860	689,127 97	80,657 86	11.7
1861, up tp Sept.30	717,330 52	54,526 43	7.6

"The contracts settled from January 1 to September 30, 1861, amount to $191,289.03. The existing contracts amount to $2,463,215.60, upon which the work remaining to be done is estimated at $260,048.23. The work remaining to be done, and not under contract, is estimated to cost $60,308."

De Ruyter Reservoir.

This work was put under contract the 29th of March last, to be completed by the first of November next. Although the work will not be completed, it will be made available for at least forty feet depth of water that can be drawn another season.

The culvert and well masonry is completed, and the pipes and stop-cocks laid. The work of filling in the embankment above will go forward rapidly. The work is estimated to cost in round numbers, at contract prices, $80,000, and unless some unforeseen difficulties arise is believed to be ample.

The supply that can be received from the De Ruyter reservoir for one hundred days:

The reservoir is located in the extreme southwest corner of Madison county, town of De Ruyter, on the head waters of Limestone creek, and distant from the canal about 25 miles.

Area of pond=626 acres; drainage basin, 12,000 acres; available head, 18½ feet; fall of rain, eight inches; ratio of drainage to fall of rain=0.28; evaporation=24 inches for 100 days.

$$\text{Capacity}=\frac{626\times43.560\times18\tfrac{1}{2}}{100\times24\times60}\ \cdots\cdots\cdots\cdots=3{,}472 \text{ c. ft. pr. m.}$$

Add natural flow:=

$$\left(\frac{(12{,}000\times43{,}560\times\frac{8\times0.28}{12})-(626\times43.560\times\frac{24-8}{12})}{100\times24\times60}\right)=420 \text{ c. ft. pr. m.}$$

Total supply for 100 days .... =3,891

Tolls, Trade and Tonnage.

The following statement shows the number of tons of each class of property carried on the canals during the season of navigation, in the year 1861; and on all the railroads in the State from the first of October, 1860, to the 30th September, 1861. Comparing these two years, and we find the carrying trade on the canals has fallen off 142,579 tons, while that on the railroads has increased 718,636 tons. The aggregate of the increase in tonnage on the canals and railways in 1861 over 1860, is 576,057 tons.

Description of articles.	Tons of each class carried on the canals.	Tons of each class carried on all the railroads.	Total tons of each class carried on the canals and railroads.
Products of the forest	1,052,392	540,079	1,592,471
Products of animals	19,282	1,067,070	1,086,352
Vegetable food	2,122,237	1,220,332	3,342,569
Other agricult'l products	2,854	211,209	214,063
Manufactures	280,256	568,691	848,947
Merchandise	135,096	719,017	854,113
Other articles	895,518	1,134,011	2,029,529
Total tons carried	4,507,635	5,460,409	9,968,044

Mileage on the canals, 863,623,507.

Mileage on the railways, 660,556,875.

The mileage, or number of tons carried one mile, is stated at the foot of the table. Compared with 1860, the mileage on the canals has increased 54,099,011, and on the railroads 96,506,370. The tonnage of merchandise on the railways and canals, has decreased on both.

The following statement shows the number of tons of each class of property carried in 1861, the tolls paid on each class on the rates of that year, and, what the tolls would have been under the rates of 1851 and 1857.

Classes of property.	Tons transported in 1861.	Tolls received in 1861, under the rates of that year.	What the tolls would have been on same tonnage on the rates of 1851.	What the tolls would have been on same tonnage on the rates of 1857.
Boats and passengers of 1861.	....	$207,924	$207,924	$207,924
THE FOREST.				
Furs and peltry	155	81	81	81
Product of wood	1,052,237	398,566	339,351	375,333
AGRICULTURE.				
Product of animals	19,282	14,132	22,943	17,757
Vegetable food	2,122,237	2,856,846	2,957,263	2,941,839
All other agricul. products	2,854	1,220	2,584	2,473
Manufactures	280,256	95,722	117,032	103,184
Merchandise	135,096	107,958	375,602	209,919
Other articles	895,518	226,336	331,071	280,546
	4,507,635	$3,908,785	$4,353,851	$4,139,056

The river freight to New York, charged by canal lines on wheat and corn, during the season of 1861, averaged per month as follows:

	Wheat per bush.	Corn per bush.
May	03	02¾
June	02½	02¼
July	02½	02
August	02	02
September	02	02
October	04	03½
November	04½	04½

STATEMENT,

Showing the average rate of Lake freight on wheat and corn between Chicago, Buffalo and Oswego, also the average rate of Canal freight on the same articles between Buffalo, Oswego and New York, for each month during the season of navigation 1861.

PERIOD.	From Chicago to Buffalo.		From Buffalo to New York.		From Chicago to Oswego.		From Oswego to New York.	
	Wheat. 60 lbs.	Corn. 56 lbs.	Wheat. 60 lbs.	Corn. 56 lbs.	Wheat. 60 lbs.	Corn. 56 lbs.	Wheat. 60 lbs.	Corn. 56 lbs.
	c. m. f.	c. m. f.	c. m. f.	c. m. f.	c. m. f.	c. m. f.	c. m. f.	c. m. f.
April	13 6 9	12 8 1	....	....	17 3 3	15 6 6	....	....
May	07 2 5	06 3 7	13 8 7	12 8 1	11 5 6	10 5 6	09 2 8	08 2 2
June	06 8 8	06 3 1	11 3 8	10 3 8	10 0 0	09 3 8	08 0 0	07 0 0
July	05 7 5	05 2 5	11 5 0	10 5 6	08 5 6	07 9 3	08 0 0	07 0 9
August	10 0 0	08 8 1	11 8 1	10 8 1	13 8 8	12 6 3	08 2 5	07 2 5
September	14 0 0	12 9 3	15 7 5	14 5 0	18 9 3	17 8 1	10 7 5	09 7 5
October	18 6 3	17 2 5	20 3 1	18 3 8	24 4 3	22 5 0	13 9 3	12 9 3
November	16 0 8	14 7 5	25 6 6	23 5 8	20 6 6	19 2 5	19 5 8	18 5 0
Av. for the season.	11 5 3	10 5 6	15 7 5	14 4 3	15 6 7	14 4 6	11 1 1	10 1 0

The above rates include canal tolls, as follows:

On wheat per bushel, from Buffalo to Troy	05. 1.7
On corn per bushel, from Buffalo to Troy	04. 8.3
On wheat per bushel, from Oswego to Troy	0.2 9.5
On corn per bushel, from Oswego to Troy	02. 7.5

Highest rate lake freight from Chicago to Buffalo	26c.	wheat.
do do do Oswego	30½c.	do
do canal freight from Buffalo to New York	30c.	do
do do Oswego to New York	22c.	do

The statement showing tons of total movement for six years, the freight and tolls paid, and the average cost per ton a mile on railways and canals. The canal averages do not cover the forwarder's charge for transportation.

1856.	Tons moved one mile.	Freight and tolls.	Average per ton one mile.
New York Central railroad	145,733,678	$4,328,041	2.97 cents.
New York and Erie railroad	183,458,046	4,545,782	2.48
Canals	592,009,603	2,748,212	4.22 mills.
Totals	921,201,327	$11,622,035	1.26 cents.
1857.			
New York Central railroad	145,873,791	$4,559,276	3.13 cents.
New York and Erie railroad	167,100,850	4,097,610	2.45
Canals	484,750,864	2,045,641	4.21 mills.
Totals	797,725,505	$10,702,527	1.34 cents.

1858.	Tons moved one mile.	Freight and tolls.	Average per ton one mile.
New York Central railroad	142,691,178	$3,700,270 44	2.59 cents.
New York and Erie railroad	165,895,635	3,843,310 77	2.32
Canals	564,842,095	2,110,754 00	3.71 mills.
Totals	873,428,908	$9,654,335 21	1.10 cents.
1859.			
New York Central railroad	157,136,000	$3,337,148	2.13 cents.
New York and Erie railroad	147,127,039	3,195,869	2.17
Canals	544,309,072	1,723,945	3.16 mills.
Totals	848,572,111	$8,256,962	0.97 cents.
1860.			
New York Central railroad	199,231,392	$4,095,934	2.06 cents.
New York and Erie railroad	214,084,395	3,884,343	1.84
Canals	809,524,596	3,009,597	3.72 mills.
Totals	1,222,840,383	$10,989,874	0.90 cents.
1861.			
New York Central railroad	237,392,974	$4,644,449	1.96 cents.
New York and Erie railroad	251,350,127	4,351,464	1.73
Canals	863,623,507	3,908,785	4.53 mills.
Totals	1,352,366,608	$12,924,698	0.94 cents.

The above statement shows there was a large increase in traffic during the year 1861 over any other year embraced in the series. This increase is 130,526,225 tons moved one mile, and an increase of $1,934,824 in freight and tolls over 1860, and of $1,302,663 over 1856.

It will be noticed that the average rates per ton on the canal went down on the reduction of tolls in 1858-9, and that in 1860 and 1861, the canal averages went up after the Canal Board in those years increased the rates of toll.

It will also be noticed that, in 1861, the averages on the New York Central railroad have run down from 3.13 cents, in 1857, to 1.96 cents a ton a mile—a reduction of 1.17 cents a ton a mile. That the averages on the New York and Erie have run down from 2.48 cents a ton per mile in 1856 to 1.73 cents in 1861,—a reduction of three-fourths of a cent or 7.5 mills, which is equal to a loss of $1,885,125.19 on freight. This road received in 1861 $194,336 less in freight than in 1856, on an increased carriage of 67,892,081 tons carried one mile. It will be found on examining the tables that the New York and Erie railroad carried, in 1861, 310,203 tons more than in 1856, of through and way freight, but the aggregate earnings were $194,336 less.

The figures below, compiled from the reports of the Central R. R. company, present the traffic of the road in January and

August, 1861; the number of tons carried one mile in each month, the freight received, and the average per ton per mile:

	Tons moved one mile.	Freight.	Average per ton per mile.
New York Central RR., January	16,017,336	337,391	2.11 cts.
do do August	18,229,903	324,687	1.78
Total	34,247,239	662,078	1.93

Percent of tonnage for January	46.77
Percent of tonnage for August	53.23
Percent of freight for January	50.96
Percent of freight for August	49.04

ENLARGEMENT OF THE CHAMPLAIN CANAL AND ERIE CANAL LOCKS FOR THE PASSAGE OF GUN BOATS TO THE LAKES.

The following are extracts taken from a report submitted by Wm. B. Taylor, State Engineer and Surveyor, in answer to an Assembly resolution, March 5th, 1862.

"The following is an estimate of the cost of enlarging one tier of locks the whole length of the Erie and Oswego canals, 25 feet wide and 165 feet between quoins, admitting of the passage of a boat 24 feet wide by 150 feet long:

Erie Canal—Eastern division.

Enlarging 45 locks	$1,485,550 00	
Constructing one lock (No. 2)	53,350 00	
Enlarging one of three weigh locks, scales, &c	50,000 00	
		$1,588,900 00

Middle division.

Enlarging six locks	$183,000 00	
do one weigh lock, scales, &c.	42,000 00	
		225,000 00

Western division.

Enlarging one lock	$30,000 00	
do two guard locks	93,000 00	
do one weigh lock	48,000 00	
do five locks at Lockport	198,000 00	
Constructing 13 locks	608,000 00	
Valve gates and fixtures	25,000 00	
		1,002,000 00
Total for enlarging locks, Erie canal		$2,815,900 00

Oswego Canal.

Enlarging 18 locks	$607,500 00	
Valves and fixtures	18,000 00	
		$625,500 00
Total for enlarging locks, &c., on Erie and Oswego canals		$3,441.400 00

Estimaated cost of making the Champlain a ship canal.

The following is an estimate of the cost of enlarging the locks of the Champlain canal to 25 feet in width, admitting a boat 150 feet long. Also an estimate of the cost to enlarge the prism of said canal to the same size as the enlarged Erie canal, together with all mechanical structures, as submitted by Daniel C. Jenne, division engineer in charge:

Enlarging locks		$815,000 00
do 66 miles of canal	$1,650,000 00	
do structures on same	507,900 00	
		2,157,900 00
		$2,972,900 00
Add 10 per cent. for contingencies and engineering		297,290 00
Total, exclusive of land damages		$3,270,190 00
Add for land damages		500,000 00
Total cost of ship canal		$3,770,190 00

The following communication, received from Mr. Delano, naval constructor at the Brooklyn Navy Yard, (in answer to the inquiry as to the smallest size of gun boats that, in his opinion, should be used upon the lakes,) served to aid in fixing the size and capacity for enlargement:

"NAVY YARD, NEW YORK, *March* 13, 1862.

Hon. W. B. TAYLOR,

State Engineer and Surveyor:

Sir—In my judgment gun boats built to pass through the present locks, as now built, 96 feet by 18, would be of little service.

The boats should be at least 150 feet in length and 29 or 30 feet breadth, built upon a draft of water, say six feet light and eight feet loaded.

Very truly yours, B. F. DELANO."

The tonnage of a boat built with these dimensions would be about 380 or 400 tons.

The Federal Government are constructing gun boats for sea coast service, of the following dimensions: extreme length, 158 feet; extreme width, 27½ feet; depth of hold, 12 feet; draft, when loaded, 10 feet.

Features as a Military Route.

The distance, via Lake Champlain and the St. Lawrence, from West Troy, is 395 miles, of which 218 miles pass through British territory by natural and artificial channels, the whole arranged in detail as follows:

West Troy to Whitehall, artificial channel	66	miles.
Whitehall to Crown Point, natural channel	39	do
Crown Point to Rouse's Point, do	72	do
Rouse's Point (Canada line) to Chambly, nat. channel	33	do
Chambly canal to St. Lawrence, artificial channel	12	do
Montreal to Ogdensburgh, artificial channel	41	do
natural channel	72	do
Ogdensburgh to Kingston, do	60	do
Total	395	miles.

Making, in the whole distance, 119 miles artificial, and 276 of natural channel."

PROGRESS OF THE CANALS IN 1862.

Description of the Erie Canal, its Cost, Trade, Tonnage, and Maintenance.

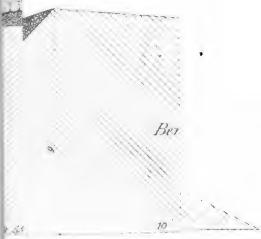
Commencing in the city of Albany, at the head of tide waters, the Erie canal is carried over a ridge of slate rock by 18 double lift locks (110×18 ft.) to an elevation of 188½ feet above tide water in 12 miles; continuing at this elevation, it reaches the Mohawk valley 14 miles from Albany, where it crosses the Mohawk river by the largest aqueduct on the canal, the length of the wooden trunk being 1,130 feet, resting on 29 stone piers, the towing path supported by 27 stone arches; its construction cost $331,000. Following the Mohawk valley, the canal recrosses the Mohawk river 24 miles from Albany, by an aqueduct similar to the other, with 14 stone arches, at an elevation of 229.80 feet above tide water.

Continuing along the Mohawk valley it passes the deep gorge forced through the hills by the river at Little Falls, overcoming, at this place, an elevation of 40 feet in 1½ miles by four double lift locks. At Utica it reaches the "summit level," 112 miles from Albany, overcoming an elevation of 426.90 feet above tide water, by 46 double lift locks. The "summit level" (Utica to Lodi) is 56 miles long, next to the longest on the canal, and is supplied with water during the dry season by 10 feeders, that furnish in the aggregate, 24,090 cubic feet per minute, including the De Ruyter reservoir.

At Syracuse, the canal falls 27 feet, or to 400 feet above tide water. From this level the Oswego canal issues, following the valley of the Onondaga creek to the Seneca river, thence down the Seneca to Three-river point, thence the Oswego river to Lake Ontario by locks and dams; a descent of 154.85 feet in 38 miles, by 18 single locks, 110×18 feet.

Two miles west of Syracuse, the canal rises 6.90 feet, and continues on this level to Jordan, 190 miles from Albany. The main supply of water for this level, or from Syracuse to Port Byron, is from the Skaneateles lake reservoir, entering the canal at Jordon. This, with the Camillus feeder, comprises all the supply during the dry season, furnishing, in the aggregate, 9,020 cubic feet per minute.

At Port Byron the canal descends 16½ feet to the "Cayuga marsh level," 390 36-100 feet above tide-water. This portion is the most interesting piece of work on the whole line. The level extends from Port Byron to Clyde, 16 miles, 7 of which the canal is carried over the Cayuga marshes and low timbered lands, three feet below canal bottom,—the banks rising 13 feet above the marsh, and the canal 10 feet. The average amount of filling per mile, carried into the work with an average haul of ¾ of a mile, was two hundred and fifty thousand cubic yards.—The material was deposited without any preparation upon the natural surface, consisting entirely of vegetable mould, the depth of which to firm bottom is from thirty to sixty feet. The canal is carried over the Seneca river at the east side of the marsh by the *Richmond aqueduct*, a beautiful stone structure 894½ feet long, supported by 4,464 bearing piles ranging in length from 20 to 30 feet. It contains 10,893 cubic yards of masonry, 110,000 lineal feet bearing piles, and 1½ million feet board measure of plank and timber. The water in the canal is carried in a wooden trunk 50 feet wide in the clear, resting on two abutments, and 30 piers of masonry 11 feet above the top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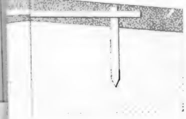

of the foundation. The towing-path is supported by 31 stone arches, each 22 feet span. The foundation covers an area of two acres. The work was commenced in January, 1849, and brought into use in the spring of 1856. It was planned and constructed under the supervision of Van R. Richmond, late State Engineer and Surveyor, and stands a monument to the skill of its projector. It is the second in size of its kind on the canal.

(See following map and sketches of the canal and aqueduct.)

After leaving the marshes, the canal rises and follows the valley of Clyde river to Lyons; thence up the valley of Mud creek to Macedon, thence across the "Perrinton swamp" to the valley of Irondequoit, the passage of which was a very formidable undertaking. The width of the valley crossed by the enlarged canal is nearly eight miles shorter than the old canal. The surface of the ground is from 20 to 80 feet below canal bottom. The heaviest mile section contains 1½ million cubic yards of filling.

Leaving the Irondequoit, the canal passes over to the valley of Genesee, crossing the Genesee river at Rochester, by a stone aqueduct 920 feet in length, supported by six beautiful stone arches, each 52 feet span. It was constructed at an expense of $500,000. The canal at Rochester has an elevation of 509 86-100 feet above tide-water.

From one and a half miles west of Rochester to Lockport, occurs the longest level on this canal, being 63½ miles. The bottom of the canal between these points rises from Rochester with a grade of 2 728-1000 feet. The size of the prism or water-way of the canal at Rochester is 71 feet surface, 53 feet on bottom, and 7½ feet deep, regularly increasing to a size of prism at Lockport to 98 feet surface, 79 on bottom, and 7½ feet deep.

At Lockport, 321 miles from Albany, the canal rises by 5 combined double locks, 55 83-100 feet in a distance of 630 feet, to an elevation of 568 42-100 feet above tide-water. They were constructed at an expense of $686,000.

From Lockport to the head of "Rock cut" 3 miles, the size of the prism is 62 feet on surface, 60 feet on bottom, and 9 feet deep; and to Pendleton, 4 miles further, the canal is 100 feet on surface, 77½ on bottom, and 9 feet deep. From Pendleton to Tonawanda, 12 miles, the canal occupies the Tonawanda creek, 200 feet wide, and a channel 9 feet deep. To Black Rock, 8 miles further, the canal is 80 feet on surface, 60 feet on bottom, and 9 feet deep; the canal entering Lake Erie at Buffalo, 350½ miles from Albany, 568½ feet above tide-water, with a total lockage of 654 80-100 feet = 1 86-100 feet per mile.

The change from the ordinary size of the canal, west of Rochester, was for supplying the canal with water from Lake Erie to the Seneca river, a distance of 142 miles, without resorting to the Genesee river, except in temporary obstruction, when the latter with the Oak orchard feeder are used.

Structures.

The following statement exhibits the extent of bridging, iron and wood superstructures, across the canal.

1st—Iron Bridges.

PLAN.	Designing engineer.	No. of bridges.	Aggregate length.	Square ft. bridge flooring.
Arch truss	Squire Whipple	116	10,113	309,457
Swarts	Samuel Swarts	7	642	25,680
Bollman	—— Bollman	9	825	36,750
Arch tubular truss	Nelson J. Beach	6	471	11,775
Simms	—— Simms	3	264	8,844
Heath	George Heath	1	77	5,236
Suspension, Foot bridge		7	707	8,322
Trapezoidal, Foot bridge		1	80	500
Riders, Hildreth, Wright	Berger & Vibbard	8	801	36,285
Total		158	13,980	437,849

2d—Wood Bridges.

PLAN.	Designing engineer.	No. of bridges.	Aggregate length.	Square ft. bridge flooring.
Six-brace bridge	Squire Whipple	280	22,695	351,772
Covered	Jervis & Hutchinson	30	2,345	45,537
Beardsley iron chords	S. H. Sweet	14	1,107	22,140
Lattice	O. W. Childs	18	1,588	32,854
Suspension, Foot bridge		11	1,055	5,275
Others, old plans	Jervis, Mills & Hutchinson	29	2,786	58,764
Total		382	31,576	516,259

From the foregoing statement, the total length of bridges would reach 8⅔ miles, and the area of bridge flooring cover 22 acres. The aggregate constant sustaining power is equal to 57,247 tons.

The following statement comprises all the structures on the Erie canal, including the bridges, with their approximate cost:

Quantities.	Kind of structures.	Price.	Amount.
437,869	Square feet flooring in 158 iron bridges............	81 c.	$354,673 89
516,259	do do 382 wood bridges...........	38 c.	196,178 42
540 sets	Bridge abutments	$2,750	1,485,000 00
540 do	do embankments, &c...	1,800	972,000 00
57 do	Double locks, aggregate length 9,833 feet	73,850	4,209,450 00
14 single	Locks, do do 2,415	31,560	441,840 00
2 do	Guard locks, do do 345	23,000	46,000 00
5 do	Weigh locks, do do 737	47,036	235,180 00
24,235	Lineal feet of trunk in 32 aqueducts...............	310	7,512,850 00
2,363	do waste walls, waste weirs............	42	99,246 00
11	Stop gates	2,000	22,000 00
190	Stone arch culverts, aggregate spans 1,523..........	4,000	760,000 00
94	Composite do do do 435..........	1,700	159,800 00
	Total approximate cost of structures...........	....	$16,494,218 31

Length of longitudinal structures :

Locks occupying channel of canal (exclusive weigh locks)	2.41 miles.
Aqueducts occupying channel of canal	4.59 do
Total..........................	7.00 do

Length structures crossing canal :

Iron bridges 2⅔ miles, wood bridges 6, total bridges..	8⅔ miles
Composite culverts 2 miles, stone arch 5, total culverts	7 do
Waste weirs; total length waste walls and abutments	⅔ do
Total...........................	16⅓ do

Feeders.

The following embraces all the available feeders for supplying the Erie canal with water during the dry season, with approximate cost of each, paid from enlargement fund :

NAME OF FEEDER.	When brought into use.	Source of supply.	Miles entering the canal from Albany.	Supply cubic feet per minute.	Total cost of feeder.
Rexford Flatts feeder	1844	Mohawk river	26	10,979	$25,000
Schoharie creek feeder	1845	Creek	51	6,800	30,000
Rocky rift feeder	1856	Mohawk river	78	10,602	190,000
Little Falls feeder	1843	Mohawk river	87	12,643	12,500
Ilion creek feeder	1838	Creek	98	800	1,000
Chenango canal	1836	Through lock	110	750	....
Betts' creek	1838	Creek	124	1,400	530
Mohawk feeder at Rome	1858	Mohawk river	125	10,979	25,976
Black River canal at Rome	......	Through lock	125	708	....
Oneida creek feeder	1835	Creek	140	1,500	34,498
Cowassolan creek feeder	1858	Creek	143	320	10,089
Erieville reservoir	1850	Reservoir	152	2,130	36,837
Chittenango creek feeder	1840	Creek and outlet		250	7,555
Cazenovia lake reservoir	1857	Reservoir		2,631	10,884
De Ruyter reservoir, through	1863	Reservoir	158	3,972	150,000
Limestone creek	1852	Creek and outlet		210	14,571
Orville (Butternut creek) feeder	1858	Creek	161	450	45,000
Camillus feeder	1843	Creek	175	1,500	11,327
*Skaneateles lake reservoir	1844	Reservoir	185	7,520	14,927
†Genesee river feeder	1826	Genesee river	259	350	42,750
Genesee Valley canal	1842	Through lock	259	861	....
Oak Orchard creek feeder	1840	Creek	303	1,400	29,722
Lake Erie, Buffalo	1856	Lake	350¼	35,000	....
				113,755	
Total cost enlargement feeders					$693,470 59
Total cost original Erie canal feeders				....	101,147 00

Cost of the Erie canal, including Enlargement and Land Damages, also the estimated cost of same by the several State Engineers.

OLD ERIE CANAL.

Estimated cost at engineers' prices.		Estimated cost at cost prices.	
When made.	Amount of estimates.	When made.	Amount of estimates.
March 11, 1811	$5,000,000 00	December, 1821	$5,941,960
March 11, 1817	4,926,738 00	Actual cost, Oct. 26, 1825	7,143,477
ENLARGEMENT.			
October 20, 1835	12,448,541 00	January 1, 1850	25,144,426
March 25, 1839	23,402,836 00	Actual cost, Jan. 1, 1863	31,834,041

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* Supply measured at the outlet, 11,280 cubic feet per minute; 3,760 cubic feet being lost through sink holes while passing to canal.

† Ordinary flow. Its capacity is equal to 7,380 cubic feet per minute.

Progress of the enlargement each year from 1850. *Estimated cost and actual payments.*

BY WHOM MADE.	Year ending Sept. 30.	Am't estimated to complete, including land damages given in Canal Appra'rs report.	Total payments by the Canal Commissioners for construction and land damages.	Estimated cost of enlargement.
H. C. Seymour......	1851	$11,101,233 20	$16,611,798 86	$27,713,032 06
Wm. J. McAlpine ...	1852	11,151,111 86	17,524,947 50	28,676,059 36
do ...	1853	10,349,702 32	18,080,087 47	28,429,789 79
Jno. T. Clark........	1854	10,383,438 36	18,662,530 58	29,045,968 94
do	1855	6,490,972 09	20,666,831 09	27,157,803 18
Silas Seymour........	1856	4,643,339 29	23,835,507 98	28,478,847 27
do	1857	2,761,712 11	26,038,213 31	28,799,925 42
Van R. Richmond....	1858	2,044,594 73	27,404,341 59	29,448,986 32
do	1859	1,296,507 58	27,833,336 82	29,129,844 40
do	1860	1,073,871 53	30,043,552 93	31,117,424 46
do	1861	615,509 35	30,604,691 31	31,220,200 66
William B. Taylor....	1862	*549,344 91	31,284,344 91	31,834,041 30

* $136,873.86 of this amount is for work, and the rest is for land damages.

Total cost of Construction, Repairs, Collection, &c., of the Erie Canal, in detail, also per mile.

Classification.	Total cost.	Cost per mile.
Original Erie canal, 363 miles long	$7,143,789 86	$19,679 87
Enlargement of the Erie, 350½ miles long	31,834,041 30	90,824 65
Erie canal, including enlargement, at 350½ miles	38,977,831 16	111,206 30
Same, exclusive of feeders, structures, and land damages	18,439,848 87	52,610 10
Feeders for the canal and enlargem't	794,617 59	2,267 09
Structures for old canal and enlargement	16,494,218 31	47,059 05
Land damages for old canal and enlargement	3,249,146 39	9,270,06
Interest on loans during construction, 1817 to 1826, $1,602,376.54, and 1835 to 1863 enlargement	9,696,461 12	27,664 70
*Balance of total interest on loans,	3,817,623 46	10,891 90
Total cost constructing, including interest on loans	$52,491,915 74	149,762 90
†Total cost repairs from 1827 to 1862 inclusive	10,995,333 52	31,370 90
‡Total paid collectors, inspectors and weigh-masters	1,410,741 79	4,025 00

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* Where the interest of the Champlain and Erie are given together, the amount belonging to the Erie is obtained by a proportion of its cost to that of the Champlain.

† The repairs for the Champlain canal are assumed at 15¼ per cent. of the total cost of repairs of the Erie and Champlain canals.

‡ 89¼ per cent. of the Erie and Champlain canals is taken for the Erie.

An interesting exhibit of the average tonnage of the boats, the time necessary to make a passage, and the cost to bring a barrel of flour from Buffalo to Albany, of the lockages at Alexander's lock, and the total tons delivered at tide-water from the Erie canal, is as follows:

Year.	Average cargo of boat	Days' time between Buffalo and Albany.	Toll and freight on a barrel flour.	Lockage at Alexander's lock.	Tons delivered at tide-water from Erie canal.
1841	41	9	71 cts.	30,320	532,52
1844	49	7½	60 do	28,219	799,816
1847	67	10½	77 do	43,957	1,431,25
1848	71	9	58 do	34,911	1,184,33
1849	68	8¾	56 do	36,918	1,266,72
1850	76	9	58 do	38,444	1,554,67
1851	78	8½	49 do	40,396	1,508,67
1852	80	9	53 do	41,572	1,644,69
1853	84	9	56 do	42,967	1,851,43
1854	94	8½	52 do	35,981	1,702,69
1855	92	8½	52 do	30,873	1,420,71
1856	100	8½	60 do	31,223	1,587,15
1857	100	8½	46 do	22,182	1,117,19
1858	126	8½	34 do	23,474	1,496,65
1859	143	8½	31 do	20,274	1,451,33
1860	140	8½	42 do	32,439	2,276,06
1861	157	8½	46 do	31,179	2,449,66
1862	---	---	--	------	-------

The lockages in 1860 exceed those of any year since 1854. The lockages, however, will not increase in proportion to the increased tons delivered at tide-water. There were 573,368 more tons delivered at tide-water in 1860, than in 1854, and 746,9 more in 1861 than in 1854, with 3,542 less lockages in 1860, and 4,802 in 1861.

General view of the progress of the trade of the Erie canal, with the cost of transportation, from 1824 *to* 1862, *inclusive.*

YEAR.	Tons going from tide water.	Tons arriving at tide water.	Total lockages at Junct'n and Alexander's lock.		No. boats arrived at and cleared from New York, Albany and Troy.	COST OF TRANSPORTATION PER TON.			
						Albn'y to Buffalo.		Buffalo to Alb'ny.	
						For tolls	For tolls and freight.	For tolls	For tolls and freight.
1824	....	....	6,166	Alexander's lock.	8,760	....	....	....	....
1825	....	....	10,985		13,110	....	....	....	....
1826	35,435	....	15,156		......	....	....	....	....
1827	....	....	13,004		......	....	....	....	....
1828	56,797	....	14,579		23,662	....	....	....	....
1829	52,621	....	12,619		21,490	....	....	....	....
1830	70,154	....	14,674		23,874	$10 22	$20 00	$5 11	$9 07
1831	86,945	....	16,284		26,882	10 22	19 80	5 11	8 89
1832	....	....	18,601		25,826	10 22	20 00	5 11	9 26
1833	119,468	....	20,649		31,460	8 76	14 80	3 65	8 15
1834	114,608	....	22,911		32,438	6 57	16 40	3 28	7 68
1835	128,910	753,191	25,798		36,690	6 57	16 00	3 28	6 29
1836	133,796	696,347	25,516		34,190	6 57	21 00	3 28	7 13
1837	122,130	611,781	21,055		31,082	6 57	18 60	3 28	7 50
1838	142,802	640,481	25,962		32,120	6 57	17 80	3 28	6 76
1839	142,035	602,128	24,234		31,882	6 57	17 80	3 28	6 94
1840	120,586	669,012	26,987		30,456	6 57	16 60	3 28	7 50
1841	162,715	774,334	30,320		33,782	6 57	12 20	3 28	6 57
1842	123,294	666,626	31,682	Junction and Alexander's lock.	32,840	6 57	13 20	3 28	6 02
1843	143,595	836,861	31,348		32,826	6 57	11 20	3 28	5 56
1844	176,737	1,019,094	38,313		38,786	6 57	13 00	3 28	5 56
1845	195,000	1,204,943	39,099		40,094	6 57	9 60	3 28	6 57
1846	213,295	1,362,319	43,202		42,936	4 80	8 00	2 92	5 92
1847	288,261	1,744,283	54,131		51,634	4 80	7 60	2 92	7 13
1848	329,557	1,437,905	44,076		43,018	4 80	7 80	2 92	5 37
1849	315,550	1,579,946	47,315		46,520	4 80	7 80	2 92	5 18
1850	418,370	2,033,833	51,245		46,880	4 80	7 20	2 92	5 48
1851	467,961	1,977,151	54,257		53,316	4 40	6 20	2 19	4 71
1852	521,527	2,234,822	55,050		55,166	2 92	5 20	2 19	4 90
1853	584,141	2,505,797	56,280		55,732	2 92	5 60	2 19	5 18
1854	531,831	2,223,743	50,674		48,825	2 92	5 00	2 19	4 81
1855	504,696	1,895,593	44,401		41,110	2 92	5 00	2 19	4 81
1856	573,733	2,123,469	47,096		44,628	2 92	5 40	2 19	5 56
1857	340,170	1,617,187	31,473		35,506	2 92	4 80	2 19	4 26
1858	287,073	1,985,142	32,386		33,118	1 46	2 80	1 46	3 14
1859	317,459	2,121,672	29,514		29,788	70	2 40	1 41	2 87
1860	373,735	2,854,877	41,598		40,608	1 40	2 40	1 41	3 88
1861	340,736	2,980,144	37,786		39,526	1 40	2 20	1 76	4,26
1862	....	....	......		....	....	....	....	....

Detail statement of the cost of construction of the Champlain canal and feeder, up to Sept. 30, 1862.

From Wm. Jerome's field book, the cost of the canal is given up to 1832, inclusive, as follows:

Cost of canal	$828,416 12
Lock and dam at Troy	92,595 01
Total cost of original construction, as per Wm. Jerome	$921,011 13
Amount expended enlarging and improving Glens Falls feeder, under act May 25, 1836, as per Commissioners' report for 1843	91,944 00
Rebuilding and enlarging locks from 1854 to 1859, inclusive	410,642 06
Improving and stopping leaks in Glens Falls feeder, act chap. 213, Laws 1860	46,808 00
Weigh lock, culvert, house and scales at Waterford	29,115 39
Amount done and to be done enlarging locks under cont., 1862	49,097 76
Improving 16 and 5 mile levels—driving piles, &c.	18,180 06
Cost of construction up to Sept. 30, 1862	$1,566,798 28
Land damages from 1851 to 1863	82,208 80
do 1837 to 1851	64,920 98
do 1817 to 1837=⅛ of Erie and Champlain	32,134 57
Total cost, with land damages	$1,746,062 63
Total interest on loans, being 6¼ per cent. of total interest for Erie and Champlain, and enlargement of the Erie	900,939 71
Total cost, with interest on loans	$2,647,002 34
Total expended for repairs and collection, &c., from 1827 to Sept. 30, 1862, being 15½ per cent. of the whole for the Erie and Champlain	2,296,358 93
Total cost, construction, repairs, collection, &c., with interest on loans	$4,943,361 27

Total Cost of Construction and Repairs of the New York State Canals, including Land Damages and Engineering.

September 30, 1862.	Total paid for repairs.	Original cost of canal.	Cost with improvement and land damages.	Cost with interest on loans.
Erie canal...........	$10,995,333 52	$7,143,789 86	$38,977,831 16	$52,491,915 74
Oswego canal.........	1,244,442 48	565,437 35	3,077,429 57	3,612,825 11
Cayuga and Seneca c'l	486,582 77	214,000 00	1,347,149 26	1,584,554 09
Champlain c'l & feeder	2,016,895 00	921,011 13	1,746,062 63	2,647,002 34
Black River do	181,887 70	2,954,848 64	3,157,296 38	4,239,566 75
Genesee Valley canal.	612,336 01	5,342,753 20	5,663,183 99	9,408,896 19
Chenango canal......	506,681 79	2,316,186 00	2,491,351 68	3,754,143 80
Chemung c'l and feeder	756,198 18	314,395 00	1,052,343 51	1,623,693 42
Oneida river improv'nt	23,908 41	79,346 00	107,959 55	173,348 54
Oneida Lake canal....	79,406 49	*78,829 85	50,000 00	74,916 09
Seneca river towing path and B. canal..	9,662 03	14,846 00	16,585 13	16,585 13
Crooked Lake canal..	127,817 37	156,776 00	306,103 28	418,890 96
Totals.............	$17,041,151 75	$20,102,237 03	$57,993,296 14	$80,046,338 16

* This amount was paid by the company as reported by the petitioners in their application to the State to purchase the same. See Senate Document No. 16, 1837. They reported the cost of the canal at $64,886.37, and the feeder $13,938.48.

The following statement shows the net gain and loss upon each and all the New York State Canals, from 1817 to Sept. 30, 1862.

NAME OF CANAL.	Total amount tolls received from completion of canal, to Sept. 30, 1862.	Total expenditures for repairs, collectors, inspectors and weighmasters.	Surplus and deficiencies.
Erie canal......	$71,783,670 65	$12,518,860 03	$59,264,810 62*
Oswego canal.................	2,022,365 73	1,450,403 37	571,962 36*
Cayuga and Seneca canal......	694,280 27	557,934 64	136,345 63*
Champlain canal and feeder....	4,127,646 60	2,296,358 93	1,831,287 67*
Black River canal............	71,536 38	310,233 39	238,697 01†
Genesee Valley canal.........	538,050 77	849,284 96	311,234 19†
Chenango canal...............	509,374 78	690,471 40	181,096 62†
Chemung canal and feeder.....	375,819 64	935,996 26	560,176 62†
Crooked Lake canal...........	40,216 01	185,338 03	145,122 02†
Oneida Lake canal............	65,130 30	113,024 28	47,893 98†
Oneida river improvement......	191,139 08	24,730 00	166,409 08*
Baldwinsville canal and Seneca towing path...............	1,201 49	11,185 45	9,983 96†
	$80,420,431 70	$19,943,820 74	$60,476,610 96†

Note—The sign * is for surplus, and † for deficiencies.

Total receipts by the Commissioner of the Canal Fund on account of all the New York State Canals, from 1817 *to Sept.* 30, 1862.

Total am't tolls received from railroads & canals	$81,088,958	45
Salt duty	2,055,458	06
Vendue duty	3,592,039	05
Steamboat tax	73,509	99
Rent of surplus water	89,421	74
Total canal receipts proper	$86,899,387	29
Avails of loans	$56,331.755	29
do temporary loans	3,406,467	00
Total amount loans applied to construction, &c.	$59,738.222	29
Total canal receipts and loans applied to construction, &c	$146,637,609	58
Avails canal revenue certificates	$1,512,390	75
Interest on investments and deposits	3,723,417	12
Total from canal paper	$5,235,807	87
Receipts from taxes	$8,306,881	94
Miscellaneous receipts	1,569,709	38
Erie and Champlain canal for deficiencies	4,971,840	12
do do B. River canal and Erie feeder	290,097	66
Sales of land	320,518	15
General Fund for deficiencies	1,386,498	88
Sum total receipts	$168,718,963	48

Total expenditures on all the Canals by the Commissioners of the Canal Fund, from 1817 *to Sept.* 30, 1862.

Classification.	Amounts.	
By Canal Commissioners for construction, land damages and engineering	$60,824,627	31
Seneca Lake Navigation Co., and purchase of Oneida Lake canal	103,871	88
Total interest on loans contracted for construction, &c	31,821,403	12

Paid on principal of loans contracted for construction, &c	$31,610,719 56
Paid on principal of temporary loans and premiums on investment	3,573,266 79
Black River canal for Erie canal feeder	290,097 66
Total amount paid for construction, damages, &c	$128,223,986 32
Total paid for repairs, collection and weigh masters	20,049,427 79
Miscellaneous payments	2,512,386 10
Total construction and management	$150,785,800 31
To the General Fund and Fund Debt	8,372,019 39
Deficiencies of lateral canals and Oneida river improvement	4,971,840 12
Total payments	$164,129,659 82

Dimensions of the New York State canals, with cost of each per mile, September 30th, 1862.

NAME OF CANAL.	When authorized.	When completed.	Length in miles.	SIZE OF CANAL.			NO. & SIZE LOCKS.			Cost per mile, canal improvements and land damages.
				Width on surface.	Width on bottom.	Depth of water.	Number of locks.	Length between quoins.	Width in clear.	
Erie canal	1817	1825	363	40	28	4	83	90	15	$19,679 87
do enlargem't same	1835	1862	350¼	70	56	7	71	110	18	90,824 65
Oswego canal	1825	1828	38	40	24	4	18	90	15	14,880 00
do enlargem't same	1847	1862	38	70	56	7	18	110	18	66,105 00
Cayuga and Seneca canal	1825	1828	21	40	24	4	10	90	15	10,190 50
do enlargem't same	1836	1862	23	70	56	7	11	110	18	49,282 00
Champlain canal	1817	1822	66	50	35	5	20	100	18	21,556 32
do Glens Falls feeder	1822	1837	12	50	35	5	13	100	18	
do pond above Troy dam	1822	1837	3	......	......	.....	1	.....		
Black River canal and feed'r	1836	1849	50	42	26	4	109	90	15	60,000 00
do improvement	1849	1861	42¼	......	......	.....	1	110	18	3,707 00
Genesee Valley canal	1836	1861	124⅜	42	26	4	112	90	15	45,305 00
Chenango canal	1833	1836	97	40	24	4	116	90	15	25,684 00
Chemung canal and feeder	1829	1831	39	42	26	4¼	53	90	15	26,983 00
Oneida river improvement	1839	1850	20	80	60	4¼	2	120	30	5,397 00
Oneida Lake canal	1832	1836	7	40	24	4	7	90	15	7,143 00
Baldwinsville canal and Seneca towing path	1838	1839	5⅜	40	24	4	1	90	15	2,884 00
Crooked Lake canal	1829	1833	8	42	26	4	27	90	15	38,262 00

Statement of total length navigable miles of canals, feeders and rivers, with lakes, connected artificially with canals in New York State.

	Miles.
Total length of artificial canals and feeders	886½
Length Hudson river, New York to Waterford	155
Lake Champlain, Whitehall to Rouse's Point	111
Oneida lake	22
Cayuga lake	39
Seneca lake	35
Crooked lake	19
Total	1,267½

COST OF TRANSPORTATION.

Statement showing the tons of total movement for nine years, the tolls paid, freight paid to carrier, and the average cost per ton per mile.

New York State Canals.

YEAR.	Tons moved one mile.	Amount of tolls.	Amount of tolls and freight.	Cost per ton per mile.	
				For tolls.	For tolls & freight.
1853...	700,389,933	$3,204,718 00	$7,393,884 00	4.57 mills.	1.05 cts.
1854...	668,559,044	2,773,566 00	5,782,855 00	4.15 "	0.865 mills
1855...	619,170,651	2,085,077 00	5,841,420 00	3.36 "	0.943 "
1856...	592,009,603	2,748,212 00	6,573,225 00	4.22 "	1.11 cts.
1857...	484,750,864	2,045,641 00	3,876,000 00	4.21 "	0.80 mills
1858...	564,842,095	2,110,754 00	4,502,437 00	3.71 "	0.80 "
1859...	544,309,072	1,723,945 00	3,665,806 00	3.16 "	0.677 "
1860...	809,524,596	3,009,597 00	8,049,450 00	3.72 "	1.00 cts.
1861...	863,623,507	3,908,785 00	9,369,378 00	4.53 "	1.08 "
1862...	....	....	....	....	....

COST OF TRANSPORTATION.

Statement showing the tons of total movement and mileage on the New York Central and New York and Erie Railroads, and freight on the same, and the average cost per ton per mile.

Railroads.

YEAR.	NEW YORK CENTRAL RR.			NEW YORK AND ERIE RR.		
	Tons moved one mile.	Receipts for freight.	Per ton per mile	Tons moved one mile.	Receipts for freight.	p'r ton pr m'o
			cents.			cents.
1853............	54,701,350	$1.838.830 00	3.36	101,626,522	$2.537.214 00	2.49
1854............	81,168,080	2,479,820 00	3.05	130,808,034	3,369,590 00	2.57
1855............	99,605,836	3,189,603 00	3.20	150,673,998	3,653,002 00	2.43
1856............	145,733,678	4,328,041 00	2.97	183,458,046	4,545,782 00	2.48
1857............	145,873,776	4,559,276 00	3.13	167,100,850	4,097,610 00	2.45
1858............	142,691,178	3,700,270 00	2.59	165,895,635	3,843,311 00	2.32
1859............	157,136,000	3,337,148 00	2.13	147,127,039	3,195,870 00	2.17
1860............	199,231,392	4,095,934 00	2.06	214,084,395	3,946,410 00	1.84
1861............	237,392,974	4,664,449 00	1.96	251,350,127	4,351,464 00	1.73
1862............	296,963,492	6,607,330 96	2.22	351,092,285	6,642,914 68	1.89

General view of tolls, trade and tonnage, with percentage of increase and decrease in each fiscal year, on the New York State Canals.

YEAR.	MILES RUN BY FREIGHT BOATS.		TOTAL MOVEMENT.		TOTAL TOLLS COLLECTED.	
	Per cent increase.	Miles run.	Tons.	Per ct. incr'e and decrease	Tolls.	Per ct. inc're and decrease
1836	......	......	1,310,807	......	$1,614,336 43	......
1837	......	5,556,950	1,171,296	10.7†	1,292,623 38	20.†
1838	7.7†	5,126,800	1,333,011	14.*	1,590,911 07	23.2*
1839	11.4*	5,785,850	1,435,713	7.7*	1,616,382 02	1.6*
1840	3.*	5,952,300	1,417,046	1.3†	1,775,747 57	10.*
1841	19.6-10*	7,103,580	1,521,661	7.6*	1,034,882 82	41.6†
1842	13.1-10†	6,173,200	1,236,931	19.†	1,749,197 52	69.9*
1843	6.7*	6,586,700	1,513,439	23.*	2,081,590 17	19.2*
1844	19.2*	7,841,750	1,816,586	20.*	2,446,374 52	17.5*
1845	1.1*	7,924,250	1,977,565	9.*	2,646,181 87	8.1*
1846	14.2*	9,065,450	2,268,662	14.5*	2,756,120 89	4.5*
1847	30.*	11,733,250	2,869,810	27.*	3,635,380 00	31.9*
1848	18.2†	9,633,850	2,796,230	2.6†	3,252,212 19	10.6†
1849	5.3*	10,153,350	2,894,732	3.6*	3,268,826 03	.5*
1850	5.5*	10,718,100	3,076,617	6.4*	3,273,899 22	.2*
1851	11.4*	11,926,950	3,582,733	16.6*	3,329,727 00	1.8*
1852	3.2*	12,306,950	3,863,441	7.8*	3,118,244 02	6.4†
1853	.2*	12,327,050	4,247,852	10.*	3,204,717 99	2.8*
1854	8.7†	11,244,200	4,165,862	2.†	2,773,566 35	13.4†
1855	14.†	9,671,450	4,022,617	3.4†	2,805,076 10	1.2*
1856	.1†	9,656,700	4,116,082	2.3*	2,748,211 67	2.†
1857	23.7†	7,374,850	3,344,061	19.†	2,045,640 75	25.6†
1858	7.*	7,886,100	3,665,192	10.*	2,110,753 82	3.2*
1859	11·1†	7,010,750	3,781,684	3.2*	1,723,944 97	18.5†
1860	41.*	9,930,300	4,650,214	22.8*	3,009,597 04	74.6*
1861	4.2*	10,351,350	4,507,635	3.1†	3,908,784 81	30.1*
1862	......	......	4,800,000	6.5*	4,790,518 09	22.4*

NOTE.—The sign * indicates increase, and † decrease of percentage.

TABLE *showing the tendency of lockages upon each division of the Erie Canal, with the percentage of decrease as compared with the lockages on each.*

YEAR.	DOUBLE ENLARGED LOCKS.				SINGLE ENLARGED LOCKS.		
	E. DIVISION.	MIDDLE DIVISION.			WESTERN DIVISION.		
	Lock 3 miles west of Schenec'dy	Syracuse lock.	Geddes lock.	Percent'ge less than on the E. division.	Lockport locks.	Black Rock guard lock.	Percent'ge less than M. div'n.
1837	21,055	18,181	15,207	21.	10,041	11,173	36.5
1838	25,962	20,383	18,557	25.	...	...	...
1839	24,234	...	...	...	...	...	...
1840	26,987	...	...	...	...	...	...
1841	30,320	...	...	...	...	...	...
1842	22,869	19,397	16,069	22.4	11,697	11,097	36.
1843	23,184	21,165	17,447	16.5	11,697	12,769	36.8
1844	28,219	25,198	20,044	20.	12,994	14,554	39.
1845	30,452	28,203	23,052	15.9	15,665	14,296	41.7
1846	33,431	32,212	25,225	14.1	20,033	16,343	36.6
1847	43,957	39,149	31,650	19.7	26,327	27,295	24.2
1848	34,911	34,760	29,066	8.4	20,255	19,470	38.
1849	36,918	38,634	28,740	8.7	20,124	18,181	23.
1850	38,444	41,170	27,799	10.1	21,111	20,103	11.
1851	40,396	...	29,535	10.	25,094	20,515	36.
1852	41,572	38,933	29,952	17.1	25,164	20,830	33.2
1853	42,967	35,559	29,332	24.5	20,839	19,476	37.1
1854	35,981	32,813	29,088	14.1	23,152	18,632	32.5
1855	30,873	29,365	28,858	4.1	20,752	18,245	34.3
1856	31,223	28,547	20,788	21.3	18,538	15,894	30.
1857	22,182	25,699	16,337	5.3	16,374	12,503	31.4
1858	23,474	27,054	16,957	6.6	15,117	13,050	36.1
1859	21,905	22,547	...	21.	11,700	10,695	35.2
1860	32,439	32,862	21,880	15.6	19,585	16,815	33.6
1861	31,179	29,510	24,283	14.	25,261	20,549	14.8
1862	...	...	...	...	...	...	...

Cost of all the weigh locks on the New York State Canals.

Contractor for scale.	Location of lock.	Cost of buildings and scales.			Total, including lock and culverts.
		Buildings.	Scales.	Total buildings and scales.	
Sampson & Tibbits Scale Co.	Waterford	$823 00	$3,500 00	$4,323 00	$29,114 00
	Albany	8,275 00	4,896 00	13,171 00	35,004 00
	Troy	8,230 00	4,000 00	12,230 00	46,674 00
Squire Whipple.	Utica	8,275 00	4,896 00	13,171 00	56,593 00
Fairbanks & Co.	Syracuse	8,283 00	4,050 00	12,333 00	38,466 00
Duryea & Forsyth.	Rochester	6,671 00	4,896 00	11,567 00	51,442 00

Estimate submitted to the Convention in 1846, *of the ability of the canals to provide for the Sinking Fund charges.*

YEAR.	1. Tolls of 1846, increased at 3.02 per cent annually.	2. Estimated ordinary annual expenses.	3. Net revenue.
1846	$2,757,178 08	$600,000 00	$2,157,178 08
1847	2,840,444 86	600,000 00	2,240,444 86
1848	2,923,711 64	600,000 00	2,323,711 64
1849	3,006,978 42	600,000 00	2,406,978 42
1850	3,090,245 20	600,000 00	2,490,245 20
1851	3,173,511 98	600,000 00	2,573,511 98
1852	3,256,778 76	600,000 00	2,656,778 76
1853	3,340,045 54	600,000 00	2,740,045 54
1854	3,423,312 32	600,000 00	2,823,312 32
1855	3,506,579 10	600,000 00	2,906,579 10
	$31,318,785 90	$6,000,000 00	$25,318,785 90

This table shows the actual receipts and annual charges for repairs of canals for ten years, and the net revenue.

YEAR.	1. Actual tolls of canals, 10 years.	2. Actual annual repairs.	3. Net revenue.
1846	$2,842,214 13	636,353 01	$2,205,861 12
1847	3,473,484 60	641,650 08	2,831,834 52
1848	3,204,070 16	855,860 64	2,348,209 52
1849	3,442,906 62	685,803 91	2,757,102 71
1850	3,486,172 30	835,965 81	2,650,206 49
1851	3,722,163 11	907,730 20	2,814,432 91
1852	3,179,145,78	1,049,045 92	2,130,099 86
1853	3,168,546 51	1,098,476 92	2,070,069 59
1854	2,988,665 21	1,237,866 20	1,750,799 01
1855	2,639,792 12	989,792 12	1,650,000 00
Actual	$32,147,160 54	$8,938,544 81	$23,208,615 73
Estimated	31,318,785 90	6,000,000 00	25,318,785 90
Difference	$828,374 64	$2,938,544 81	$2,110,170 17

STATEMENT.

Progress of the entire Canal Debt.

Fiscal year.	Borrowed.	Redeemed.	Canal debt at close of each fiscal year.
1817	$200,000 00		$200,000 00
1818	200,000 00		400,000 00
1819	400,000 00		800,000 00
1820	693,500 00		1,494,000 00
1821	1,400,000 00		2,895,500 00
1822	1,350,000 00		4,243,500 00
1823	1,656,000 00		5,899,500 00
1824	1,568,270 99		7,467,770 99
1825	270,000 00		7,737,770 99
1823	377,000 00	$270,000 00	7,844,770 99
1827		94,615 00	7,750,155 99
1828	210,000,00	20,000 00	7,940,155 99
1829	87,000,00	321,142 99	7,706,013 00
1830	150,000 00	30,977 14	7,825,035 86
1831	240,263 00	9,653 00	8,055,645 86
1832			8,055,645 86
1833	95,737 00	1,478,376 57	6,673,006 29
1834	950,000 00	588,006 61	7,034,999 68
1835		706,943 49	6,328,056 19

STATEMENT,

Showing the progress of the Canal Debt, the amount paid for interest, on loans and to the Canal Commissioners; also the Surplus Revenues in each fiscal year, from 1836 *to* 1862.

FISCAL YEAR.	PROGRESS OF THE CANAL DEBT.			PAID		Surplus revenues in each fiscal year.
	Borrowed.	Redeemed.	Canal debt at close of each fiscal year.	Interest on loans.	Canal Commissioners on all the canals.	
1836	$650,000 00	$651,249 46	$6,326,806 73	$328,744 86	$977,550 82	$1,130,856 15
1837	810,920 22	971,644 93	6,166,082 02	309,108 82	1,206,663 63	716,616 17
1838	3,493,061 54	351,023 15	9,308,120 41	446,798 88	1,640,070 19	843,247 87
1839	1,545,000 00	67,300 33	10,785,820 08	494,817 34	3,655,460 09	1,151,031 03
1840	3,478,553 90	137,726 22	14,126,647 76	658,921 58	5,005,515 75	1,031,806 70
1841	2,213,497 57	33,770 85	16,306,374 48	801,683 57	3,647,214 53	1,475,169 16
1842	3,411,618 00	143,600 03	19,574,392 45	1,006,497 81	2,599,116 81	1,154,879 50
1843	1,002,700 00	184,768 27	20,392,324 28	1,093,474 98	797,230 84	1,422,683 52
1844	655,000 00	333,418 60	20,713,905 58	1,116,726 53	712,449 5[illegible]	1,751,599 62
1845	245,000 00	1,268,884 81	19,690,020 77	1,104,319 98	333,717 68	1,637,427 11
1846	300,000 00	2,961,780 64	17,028,240 13	976,552 48	182,367 30	2,159,496 75
1847		284,490 56	16,743,749 57	937,205 64	162,276 57	2,819,944 18
1848	1,314,819 34	1,344,919 00	16,713,649 91	911,736 05	864,767 36	2,301,117 74
1849	1,889,024 76	2,097,392 00	16,505,345 67	898,599 05	1,513,862 71	2,693,116 27
1850	192,595 49	482,786 64	16,215,144 52	868,873 74	2,132,370 93	2,557,115 56
1851	1,000,000 00	573,609 91	16,641,534 61	835,064 66	1,444,706 71	2,796,269 14
1852	700,000 00	340,265 45	17,001,269 16	843,795 62	1,381,254 63	2,125,811 57
1853			17,001,269 16	960,790 28	1,022,005 84	2,063,713 22
1854	2,250,000 00	479,025 00	18,772,244 16	926,231 51	1,156,024 74	1,744,248 77
1855	3,750,000 00	2,240,911 00	20,281,333 16	1,076,573 17	2,938,707 23	1,643,113 99
1856	6,750,000 00	4,489,266 34	22,542,066 82	1,194,306 62	4,011,241 22	1,935,107 23
1857	2,750,000 00	102,285 00	25,189,781 82	1,361,736 93	2,941,936 58	1,561,350 92
1858	2,200,000 00	2,929,767 34	24,460,014 48	1,400,120 80	1,942,658 43	993,325 97

1859		152,170 00	24,307,844 48	1,358,892 32	856,159 40	962,000 67
1860	3,900,000 00	1,100,523 00	27,107,321 48	1,472,745 78	3,264,976 23	1,669,611 61
1861	1,200,000 00	2,175,551 23	26,131,770 25	1,505,304 64	1,188,758 07	2,695,842 16
1862		2,120,000 00	24,011,770 25	1,429,859 36	1,264,078 51	4,081,591 35
Deduct the debt in 1835			6,328,056 19			
Increase of debt, 1836 to 1862			$17,683,714 06			
Paid interest, 1836 to 1862				$26,325,483 05		
Paid Canal Commissioners, 1836 to 1862					$48,843,151 82	
Amount of surplus revenues, 1836 to 1862						$49,118,093 93

STATEMENT,

Showing the various tonnage of the boats registered in each of the last sixteen years, and the progressive increase of their capacity.

TONNAGE.	Inventory of all boats to Jan. 1844.	NEW BOATS REGISTERED.																	
		1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861
250.	....	....	....	....	....	....	....	....	....	....	3	1	....	1	1	1	2	2	16
240.	....	....	....	....	....	....	....	....	....	....	1	....	1	2	....	....	....	....	7
220.	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	3	55
200.	....	....	....	....	....	....	....	....	....	....	5	3	4	....	3	3	4	33	176
180.	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	7	12	60	51
170.	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	15	7	17	9
150.	....	....	....	....	....	....	....	2	....	1	6	13	2	2	51	46	11	14	27
140.	....	....	....	....	....	....	....	....	....	....	....	....	....	4	15	5	1	2	19
135.	....	....	....	....	....	....	....	....	....	....	....	....	....	5	2	....	....	2	1
130.	....	....	....	....	....	....	1	....	1	2	7	9	43	22	16	4	2	2	3
125.	....	....	....	....	....	....	....	....	1	....	18	105	18	14	21	15	1	5	6
120.	....	....	....	....	....	....	1	....	2	....	16	143	125	118	84	13	9	22	15
115.	....	....	....	....	....	....	....	....	....	....	10	34	17	13	4	....	....	5	1
110.	....	....	....	....	....	....	....	1	....	....	16	87	13	10	6	3	1	4	6
105.	....	....	....	....	....	....	....	....	....	....	....	....	....	1	2	....	2	....	....
100.	....	....	....	....	....	....	2	13	27	34	79	83	28	28	8	25	14	55	69
95.	....	....	1	1	6	....	4	6	23	63	180	69	40	38	18	15	5	13	20
90.	2	1	4	6	27	10	4	25	72	90	164	95	58	69	43	16	36	42	42
85.	1	....	1	1	45	21	13	16	11	22	22	20	16	3	16	5	8	35	30
80.	3	9	13	100	560	143	78	38	28	26	33	44	28	6	15	22	25	49	37
75.	14	33	60	186	553	158	75	17	22	10	15	32	43	17	14	14	21	19	6
70.	175	124	107	123	162	59	20	20	18	9	6	10	23	4	3	7	16	4	7
65.	295	94	54	26	44	13	2	4	1	4	3	1	2	....	1	3	4	3	2
60.	526	71	33	9	30	25	7	3	2	2	2	2	4	....	3	18	8	2	6
55.	256	15	4	1	18	8	....	....	....	....	....	....	....	....	....	....	10	....	....
50.	457	14	5	3	4	2	2	4	1	6	3	1	8	1	....	7	1	2	2
45.	158	1	2	1	3	4	....	....	1	....	....	1	....	....	....	1	3	1	....
40.	149	....	....	3	4	1	....	3	1	....	....	1	....	1	1	3	....	1	1

30	34	11	1	2	3	6	4	......	......	......	......	......	......	......	1	......	......	......	......
25	10	3	......	4	3	......	......	......	......	......	......	1	1	......	......	3	......	......	......
20	8	......	3	3	2	......	2	......	......	......	......	......	1	1	......	......	......	2	1
15	3	1	......	......	1	1	......	......	......	......	......	2	1	1	......	1	1	......	1
10	4	......	1	2	3	1	......	......	......	2	......	......	......	1	1	1	1	2	......
5	......	......	4	......	......	......	......	1	......	......	......	......	......	......	......	1	1	1	......
2	......	......	3	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
	2,126	378	297	477	1,466	457	215	152	213	271	590	760	471	364	329	255	206	403	619

N. B.—An allowance must, of course, be made of such boats as have gone out of use.

Accurate accounts were made of the number of boats on the first of January, in the years 1847, 1853 and 1859, and resulted as follows:

January 1, 1847,	whole number of boats		2,725
January 1, 1853,	do	do	3,401
January 1, 1859,	do	do	3,867

TABLE *exhibiting the date of the opening and closing of the Hudson river, and the number of days open; also the time of commencement and close of each navigable season of canals, and the number of days of navigation since* 1824; *also the date of the opening of Lake Erie, since* 1827.

OPENING AND CLOSING OF THE HUDSON RIVER.			COMMENCEMENT AND CLOSE OF NAVIGATION OF ERIE CANAL.			Opening of the lake.
River open.	River closed.	Open days.	Canal open.	Canal closed.	Navigable days.	
March 3, 1824	Jan. 5, 1824	309	April 30, 1824	December 4	219	
March 6, 1825	Dec. 13, 1825	283	April 12, 1825	do 5	238	
Feb'y 25, 1826	Dec. 24, 1826	302	April 20, 1826	do 18	243	
March 20, 1827	Nov. 25, 1827	251	April 22, 1827	do 18	241	April 21, 1827
Feb'y 8, 1828	Dec. 23, 1828	220	March 27, 1828	do 20	269	April 1, 1828
April 1, 1829	Jan. 11, 1829	286	May 2, 1829	do 17	230	May 10, 1829
March 15, 1830	Dec. 25, 1830	283	April 20, 1830	do 17	242	May 5, 1830
March 15, 1831	Dec. 6, 1831	263	April 16, 1831	do 1	230	May 8, 1831
March 25, 1832	Dec. 21, 1832	289	April 25, 1832	do 21	241	April 27, 1832
March 21, 1833	Dec. 13, 1833	277	April 19, 1833	do 12	238	April 23, 1833
Feb'y 29, 1834	Dec. 15, 1834	291	April 17, 1834	do 12	240	April 6, 1834
March 25, 1835	Nov. 30, 1835	268	April 15, 1835	November 30	230	May 8, 1835
April 4, 1836	Dec. 7, 1836	248	April 25, 1836	do 26	216	April 27, 1836
March 27, 1837	Dec. 14, 1837	261	April 20, 1837	December 9	234	May 16, 1837
March 19, 1838	Nov. 25, 1838	257	April 12, 1838	November 25	228	March 31, 1838
March 25, 1839	Dec. 18, 1839	286	April 20, 1839	December 16	241	April 11, 1839
Feb'y 25, 1840	Dec. 5, 1840	285	April 20, 1840	do 9	228	April 27, 1840
March 24, 1841	Dec. 19, 1841	286	April 24, 1841	November 30	221	April 14, 1841
Feb'y 4, 1842	Nov. 28, 1842	308	April 20, 1842	do 28	222	March 7, 1842
April 13, 1843	Dec. 10, 1843	242	May 1, 1843	do 30	214	May 6, 1843
March 18, 1844	Dec. 17, 1844	278	April 18, 1844	do 26	222	March 14, 1844
Feb'y 24, 1845	Dec. 3, 1845	283	April 15, 1845	do 29	228	April 3, 1845
March 18, 1846	Dec. 14, 1846	275	April 16, 1846	do 25	224	April 11, 1846
April 7, 1847	Dec. 25, 1847	263	May 1, 1847	do 30	214	April 23, 1847
March 22, 1848	Dec. 27, 1848	292	May 1, 1848	December 9	223	April 9, 1848
March 19, 1849	Dec. 26, 1849	286	May 1, 1849	do 5	219	March 25, 1849
March 10, 1850	Dec. 17, 1850	282	April 22, 1850	do 11	234	March 25, 1850
Feb'y 25, 1851	Dec. 14, 1851	293	April 15, 1851	do 5	235	April 2, 1851

[illegible]	[illegible]	270	April 20, 1852	do	16	239	April 20, 1852
March 23, 1853	Dec. 21, 1853	274	April 20, 1853	do	20	245	April 14, 1853
March 17, 1854	Dec. 8, 1854	266	May 1, 1854	do	3	217	April 29, 1854
March 27, 1855	Dec. 20, 1855	268	May 1, 1855	do	10	224	April 21, 1855
April 11, 1856	Dec. 14, 1856	248	May 5, 1856	do	4	214	May 2, 1856
Feb'y 27, 1857	Dec. 27, 1857	303	May 6, 1857	do	15	228	April 27, 1857
March 20, 1858	Dec. 17, 1858	273	April 28, 1858	do	8	225	April 15, 1858
March 13, 1859	Dec. 10, 1859	273	April 15, 1859	do	12	242	April 7, 1859
March 6, 1860	Dec. 14, 1860	283	April 25, 1860	do	12	232	April 17, 1860
March 5, 1861	Dec. 23, 1861	294	May 1, 1861	do	10	224	April 13, 1861
April 4, 1862	Dec. 19, 1862	259	May 1, 1862	do	10	224	

STATEMENT,

Showing, 1. *The amount of Tolls, (including rents from surplus waters) collected in each fiscal year, from* 1826 *to* 1862. 2. *Total sum paid to collectors, inspectors, and weigh masters, and the expenses of their offices.* 3. *The percentage of the cost of collection on the gross amount of Tolls collected.* 4. *The year in which the collection of Tolls commenced on each lateral canal.*

YEAR.	1. Tolls.	2. Cost of collection.	3. Per cent.	4. Name of canals.
1826...	$844,508 02	....	....	Cayuga and Seneca.
1827...	881,134 09	$275,086 61	$3 06	
1828...	831,002 10	31,095 20	3 73	Oswego.
1829...	817,919 28	32,171 04	3 91	
1830...	1,045,163 42	29,368 91	2 77	
1831...	751,268 62	27,686 13	3 72	
1832...	1,112,917 74	30,191 44	2 60	
1833...	1,388,380 53	32,474 33	2 30	
1834...	1,387,715 02	33,327 39	2 37	Chemung and Crooked Lake.
1835...	1,484,595 61	35,391 37	2 35	
1836...	1,598,455 48	35,275 62	2 19	
1837...	1,325,609 77	41,476 69	3 09	Chenango.
1838...	1,465,275 16	36,466 94	2 45	
1839...	1,655,788 56	53,329 85	3 20	
1840...	1,606,827 28	53,691 33	3 36	
1841...	1,989,686 71	53,247 08	2 66	Genesee Valley and Oneida Lake.
1842...	1,797,463 80	52,362 67	2 89	
1843...	1,953,929 08	47,065 05	2 40	
1844...	2,388,457 34	46,260 05	1 92	
1845...	2,375,533 43	47,423 69	1 98	
1846...	2,798,849 76	49,312 14	1 75	
1847...	3,463,710 26	50,759 55	1 47	
1848...	3,156,968 38	57,768 31	1 83	
1849...	3,378,920 18	56,706 62	1 68	
1850...	3,393,081 37	54,986 50	1 62	Black River.
1851...	3,703,999 34	75,358 45	2 03	
1852...	3,174,857 49	69,544 31	2 19	
1853...	3,162,190 14	70,460 42	2 22	Baldwinsville.
1854...	2,982,114 97	75,542 93	2 53	
1855...	2,632,908 11	79,846 49	3 03	
1856...	2,721,740 63	82,623 88	3 04	
1857...	2,531,804 38	83,046 94	3 28	
1858...	2,047,391 01	88,376 06	4 31	
1859...	1,814,362 47	69,582 93	3 84	
1860...	2,381,301 28	96,889 04	4 07	
1861...	3,358,033 97	70,456 85	2 10	
1862...	4,797,283 09	66,454 20	1 39	

STATEMENT,

Showing 1. *The tolls (including rents from surplus waters) received in each fiscal year, from* 1826 *to* 1862. 2. *The cost of repairs and collection of tolls.* 3. *The percentage which the cost of the maintenance of all the canals bears to the gross amount of tolls.* 4. *The aggregate tonnage of the total movement on all the canals, from* 1836, *when an account of tonnage was commenced, to* 1862.

YEAR.	1.	2.	3.	4.
	Tolls collected.	Expenses of collection and repairs.	Per cent. of cost of maint'nance on tolls.	Tonnage of all canals.
1826	$844,508 02	$531,675 73	$62 95	....
1827	881,134 99	494,701 05	56 18	....
1828	831,002 10	393,517 99	47 41	....
1829	817,919 28	357,587 52	43 76	....
1830	1,045,163 42	292,673 76	28 03	....
1831*	751,268 62	224,419 83	29 82	....
1832	1,112,917 74	428,964 78	38 54	....
1833	1,388,380 53	487,797 32	35 15	....
1834	1,387,715 02	534,897 82	38 54	....
1835	1,484,595 61	510,524 76	34 41	....
1836	1,598,455 48	467,599 33	29 22	$1,310,807
1837	1,325,609 77	608,993 60	45 88	1,171,296
1838	1,465,275 16	622,027 29	42 42	1,333,011
1839	1,655,788 56	504,757 53	30 45	1,435,713
1840	1,606,827 28	575,020 58	35 80	1,416,046
1841	1,989,686 71	514,517 55	25 84	1,521,661
1842	1,797,463 80	642,584 30	35 72	1,236,931
1843	1,953,829 08	531,145 56	27 18	1,513,439
1844	2,388,457 34	636,857 72	26 63	1,816,586
1845	2,375,533 43	738,106 32	31 07	1,977,565
1846	2,798,849 76	639,353 01	22 83	2,268,662
1847	3,463,710 26	643,766 08	18 53	2,869,810
1848	3,156,968 38	855,850 64	27 11	2,796,230
1849	3,378,920 18	685,803 91	20 30	2,894,732
1850	3,393,081 87	835,965 81	24 64	3,076,617
1851	3,703,999 34	907,730 20	24 50	3,582,733
1852	3,174,857 49	1,049,045 92	33 04	3,862,441
1853	3,162,190 14	1,098,476 92	34 73	4,247,853
1854	2,982,114 97	1,237,860 20	41 51	4,165,862
1855	2,632,906 11	989,792 12	37 59	4,022,617
1856	2,721,740 63	786,633 40	28 90	4,116,082
1857	2,531,804 38	970,453 46	38 33	3,344,061
1858	2,047,391 01	1,078,878 91	52 69	3,665,192
1859	1,814,362 47	897,878 96	49 49	3,781,634
1860	2,381,301 28	746,976 78	31 33	4,650,214
1861	3,358,033 97	706,786 14	21 05	4,507,635
1862	4,797,283 09	773,398 32	16 12	....

The tonnage returns for 1862 are not all in, but may be seen in the report of "Tolls, Trade, and Tonnage," yet to be made by the Auditor.

* Nine months.

STATEMENT,

Showing the annual receipts, payments, remainders, and deficiencies under art. 7 *of the Constitution, commencing* 1*st October*, 1846, *to* 30*th September*, 1862.

Fiscal year.	Revenue, including interest on deposits.	Charges.			
		Cost of repairs and collection of tolls.	To pay interest and principal of debt, and for support of government.	Total charges.	Remainder for completion of canals.
1847.....	$3,473,484 60	$641,650 08	$1,850,000 00	$2,491,650 08	$981,834 52
1848.....	3,204,070 16	855,850 64	1,850,000 00	2,705,850 64	498,219 52
1849.....	3,442,906 62	685,803 91	1,850,000 00	2,535,803 91	907,102,71
1850.....	3,486,172 30	835,965 81	1,850,000 00	2,685,935 81	800,206 49
1851.....	3,722,163 11	907,730 20	1,850,000 00	2,757,730 20	964,432 91
1852.....	3,179,145 78	1,049,045 92	1,850,000 00	2,899,045 92	280,099 86
1853.....	3,168,546 51	1,098,476 92	1,850,000 00	2,948,476 92	220,069 59
1854.....	2,988,665 21	1,237,866 20	1,750,799 01	2,988,665 21	†194,062 71
1855.....	2,639,792 12	989,792 12	1,650,000 00	2,639,792 12	†763,121 32
1856.....	2,749,133 40	786,633 40	1,962,500 00	2,749,133 40	†1,103,718 69
1857.....	2,559,469 06	970,453 46	1,589,015 60	2,559,469 06	†1,730,300 27
1858.....	2,072,204 88	1,078,878 91	993.325 97	2,072,204 88	†2,372,916 67
1859.....	1,859,879 63	897,878 96	962,000 67	1,859,879 63	†2,404,241 97
1860.....	2,416,588 39	746,976 78	1,669.611 61	2,416,588 39	†1,696,631 63
1861.....	3,402,628 30	706,786 14	2,695,842 16	3,402,628 30	670,400 48
1862.....	4,854,989 67	773,398 32	3,396,242 66	4,169,640 98	685,348 69
Revenue.	$49,219,839 74				
Cost of repairs and collection		$14,263,187 77			
To pay interest and principal of debt, &c..			$29,619,337 68		
Total charges				$43,882,525 45	
Remainder, as above, for completion of the canals, during the years 1847 to 1853, and 1862........................				$5,337,314 29	
Deficiencies, as above, during the years 1854 to 1861				10,935,393 05	
Balance of "remainder" for completion during 16 years					....

† Deficiencies.

List of State Engineers and Surveyors.

NAMES.	Served.		Remarks.
	From	To	
Charles B. Stuart	Jan. 1, 1848.	Dec. 31, 1849.	
Hezekiah C. Seymour	Jan. 1, 1850.	Dec. 31, 1851.	
William J. McAlpine	Jan. 1, 1852.	Aug. 1, 1853.	Resigned.
Wheeler H. Bristol			App'd Sept. 21, 1853. Declin'd.
Henry Ramsay	Dec. 10, 1853.	Dec. 31, 1853.	Appointed to fill vacancy.
John T. Clark	Jan. 1, 1854.	Dec. 31, 1855.	
Silas Seymour	Jan. 1, 1856.	Dec. 31, 1857.	
Van R. Richmond	Jan. 1, 1858.	Dec. 31, 1861.	
William B. Taylor	Jan. 1, 1862.		

Deputy State Engineers and Surveyors.

Francis H. Ruggles	1857.	Dec. 31, 1857.	
George R. Perkins	Jan. 1, 1858.	Dec. 31, 1861.	
Sylvanus H. Sweet	Jan. 1, 1862.		

LIST *of all the Civil Engineers employed upon the New York State Canals, appointed by the Canal Commissioners and Canal Board, from* 1800 *to* 1862, *inclusive.*

NAME.	When Employed.		RANK.
	From	To	
William Weston	1796	1808	Consulting engineer.
James Geddes	1808	1837	Principal do
Benjamin Wright	1817	1828	do do
Charles C. Broadhead	1817	......	do do
Lewis Garin	1817	1826	Engineer.
Canvass White	1817	1824	do
William Jerome	1817	1829	do
David S. Bates	1817	1827	do
Andrew A. Bartow	1817	1825	do
Valentine Gill	1817	1821	do
David Thomas	1817	1830	do
Marshall Lewis	1817	1821	do
Nathan S. Roberts	1818	1838	do
Caleb Hammill	1818	1821	do
Isaac Briggs	1818	1821	do
David Eddy	1822	......	do
Holmes Hutchinson	1819	1838	do
Davis Hurd	1822	1826	do
C. T. Whippo	1822	1827	do
John B. Jervis	1819	1838	do
H. G. Sargent	1824	1828	do
George W. Young	1819	1828	do
Alfred Barrett	1821	1837	do
B. H. Brown	1827	......	do
Noah Dennis	1827	1831	do
John Van Nortwick	1828	1830	do
Orville W. Childs	1828	1838	do
William Weller	1830	......	do
Frederick C. Mills	1830	1838	do
John T. Clark	1832	......	do
E. F. Johnson	1835	......	do
William J. McAlpine	1837	......	do
James Walker	1837	......	do
Timothy B. Jervis	1837	......	do
James Archbald	1837	......	do
Isaac W. Crane	1837	......	do
Portious R. Root	1837	......	do
Daniel Judson	1819	......	Assistant engineer.
William H. McElroy	1819	......	do do
Abraham Ogden	1819	......	do do

List of Civil Engineers.—Continued.

NAME.	WHEN EMPLOYED.		RANK.
	From	To	
Hiram Tibbetts	1819	......	Assistant engineer.
H. Wright	1819	......	do do
J. Rice	1822	......	do do
John Bates	1825	......	do do
William J. McAlpine	1835	1837	do do
James Van Slyck	1833	......	do do
Henry S. Dexter	1835	1838	do do
William Peacock	1817	......	Surveyor, &c.
Andrew A. Ellicott	1817	......	do
Anthony M. Hoffman	1819	......	do
Aaron Vedder	1819	......	do
David H. Vance	1819	......	do
Thomas McElroy	1819	......	do
Jno. B. Jervis	1819	......	do
James Archbald	1837	......	Chief engineer.
John Hopkins	1838	......	do
Holmes Hutchinson	1835	1841	do
Orville W. Childs	1837	1849	do
Nathan S. Roberts	1835	1841	do
Alfred Barrett	1838	1843	do
Porteous R. Root	1836	1843	do
Frederick C. Mills	1835	1843	do
J. W. Crane	1838	1843	do
Joseph D. Allen	1840	1843	do
William J. McAlpine	1838	1846	Resident engineer.
Alfred Barrett	1837	......	do do
J. W. Crane	1837	......	do do
T. B. Jervis	1837	1841	do do
Van R. Richmond	1837	1849	do do
John Lathrop	1837	1843	do do
John Lathrop	1849	......	do do
L. H. Woodworth	1837	1840	do do
D. C. Jenne	1837	1840	do do
D. C. Jenne	1848	1850	do do
L. L. Nichols	1838	1840	do do
S. T. Holmes	1838	1840	do do
J. Amsden	1838	1840	do do
H. S. Dexter	1837	1842	do do
J. Van Nortwick	1837	1847	do do
H. P. Mills	1837	1842	do do
William H. Talcott	1838	1846	do do
William B. Vedder	1839	1847	do do

List of Civil Engineers.—Continued.

NAME.	WHEN EMPLOYED.		RANK.	
	From	To		
Archibald C. Powell	1839	1846	Resident	engineer.
Noadiah M. Childs	1839	1841	do	do
Henry A. Farnum	1839	1843	do	do
Gideon Frothingham	1839	1843	do	do
Pelatiah Rawson	1839	1843	do	do
Charles A. Olmsted	1837	1843	do	do
A. J. Curtis	1840	1843	do	do
J. B. Mills	1840	1843	do	do
J. B. Mills	1849	......	do	do
O. W. Storey	1837	1843	do	do
O. W. Storey	1849	1862	do	do
James Walker	1840	1843	do	do
J. E. Cropsey	1840	1842	do	do
E. Huntington	1840	......	do	do
James Barnes	1841	1843	do	do
James Barnes	1848	1850	do	do
Erastus Hurd	1841	1843	do	do
M. M. Hall	1841	1843	do	do
John D. Fay	1841	1849	do	do
E. H. Brodhead	1842	1847	do	do
Gerrit Drake	1842	......	do	do
D. Hardenburgh	1842	......	do	do
H. Tracy	1842	......	do	do
C. B. Evans	1842	......	do	do
Alexander Campbell	1845	1850	do	do
James O. Morse	1848	......	do	do
Daniel Marsh	1848	1850	do	do
Davis Hurd	1848	1850	do	do
Charles W. Wentz	1848	1850	do	do
Charles A. Olmsted	1850	1852	Division	engineer.
John T. Clark	1850	1853	do	do
Jerome B. Stillson	1850	1853	do	do
Alexander Campbell	1852	......	do	do
Van R. Richmond	1852	1857	do	do
John D. Fay	1852	1854	do	do
John D. Fay	1856	1861	do	do
George Cole	1853	......	Acting division engineer	
Daniel C. Jenne	1854	1857	Division	do
Daniel C. Jenne	1862	......	do	do
John Lathrop	1854	1856	do	do
Charles W. Wentz	1855	1857	do	do
J. P. Goodsell	1856	1861	do	do

List of Civil Engineers.—Continued.

NAME.	WHEN EMPLOYED.		RANK.
	From	To	
J. P. Goodsell	1862		Division engineer.
Orville C. Hartwell	1856	1859	do do
Henry Van Vleck	1858	1862	do do
William B. Taylor	1860	1862	do do
Orville W. Storey	1860	1862	do do
J. P. Goodsell	1850	1853	Resident engineer.
Daniel C. Jenne	1850	1853	do do
Orville W. Storey	1850	1853	do do
Orville W. Storey	1854	1857	do do
Orville W. Storey	1859		do do
John T. Clark	1850	1853	do do
James Barnes	1850		do do
Charles W. Wentz	1850	1853	do do
Charles W. Wentz	1854	1856	do do
Daniel Marsh	1850	1853	do do
Davis Hurd	1850	1852	do do
John Lathrop	1850		do do
John Lathrop	1853		do do
J. B. Mills	1850		do do
J. B. Stillson	1850		do do
L. L. Nichols	1851	1853	do do
Morris S. Kimball	1851	1862	do do
Francis F. Curry	1852	1855	do do
Orville C. Hartwell	1852	1855	do do
William B. Vedder	1852	1855	do do
Richard Vernam	1852	1860	do do
Thomas Evershed	1852		do do
George Cole	1852	1855	do do
William A. Perkins	1852	1855	do do
William B. Taylor	1854	1860	do do
M. C. Fremyre	1854	1859	do do
Ogden Edwards	1854	1857	do do
Ogden Edwards	1860	1862	do do
C. G. Voorhies	1854	1856	do do
Henry Van Vleck	1854	1856	do do
Theophilus Williams	1854	1857	do do
Edward Colman	1854	1856	do do
Spencer Cole	1855	1857	do do
John L. Stephenson	1855	1857	do do
Nelson J. Beach	1855	1857	do do
William H. H. Gere	1855	1857	do do
William H. H. Gere	1860	1862	do do

List of Civil Engineers.—Continued.

NAME.	WHEN EMPLOYED		RANK.
	From	To	
Stephen A. Charles	1856	......	Resident engineer.
William McCammon	1856	......	do do
Thomas H. Bates	1856	1858	do do
E. W. Butler	1856	1858	do do
E. W. Butler	1860	......	do do
Daniel Richmond	1856	1862	do do
Winslow L. Kidder	1856	1859	do do
Ensign Bennett	1856	1862	do do
H. V. B. Barker	1856	1861	do do
R. H. Colburn	1856	1858	do do
Hugh M. Severance	1856	1859	do do
George H. Clark	1857	1859	do do
William J. Keeler	1858	1862	do do
S. H. Sweet	1859	1861	do do
William B. Cooper	1861	1862	do do
George E. Gray	1850	1853	First assistant engineer.
Francis A. Utter	1850	1853	do do
Henry S. Dexter	1850	......	do do
L. L. Nichols	1850	1853	do do
L. L. Nichols	1855	1857	do do
J. S. Brown	1850	1853	do do
Orville C. Hartwell	1850	1853	do do
Morris S. Kimball	1850	1852	do do
Van R. Richmond	1850	......	do do
Theodore D. Judah	1850	1852	do do
Richard Vernam	1850	1853	do do
J. B. Stillson	1850	......	do do
Ethan C. Clark	1850	1854	do do
George D. Stillson	1850	......	do do
William Mullins	1850	1853	do do
William B. Taylor	1851	1853	do do
Octave Blanc	1851	1853	do do
John G. Sippell	1851	1853	do do
M. C. Fremyre	1851	1855	do do
Van R. Sweet	1851	......	do do
James Barnes	1851	1853	do do
John L. Stephenson	1851	1856	do do
Benjamin B. Hart	1851	1853	do do
Ely S. Parker	1851	1856	do do
Henry A. Smith	1851	1853	do do
Henry Ramsey	1852	1854	do do
William A. Perkins	1852	......	do do

List of Civil Engineers.—Continued.

NAME.	WHEN EMPLOYED.		RANK.
	From	To	
D. C. Roberts	1852	......	First assistant engineer.
Daniel Richmond	1852	1854	do do
A. M. Leach	1852	1854	do do
Edward Colman	1852	......	do do
Stephen F. Gooding	1852	1854	do do
Stephen F. Gooding	1856	1862	do do
Joseph French	1852	1857	do do
Samuel T. Wright	1852	......	do do
W. D. Jones	1852	......	do do
John L. Dodge	1853	1859	do do
Egbert Bagg	1853	1856	do do
Joseph W. Clark	1853	......	do do
James P. Green	1854	1857	do do
Robert Burns	1854	1857	do do
Charles H. Beach	1854	1857	do do
S. H. Sweet	1854	1860	do do
W. S. Nearing	1854	1857	do do
E. W. Butler	1854	1857	do do
E. W. Butler	1861	......	do do
James E. Willard	1854	1858	do do
O. H. Bogardus	1854	1857	do do
D. R. Hartwell	1854	1859	do do
William B. Cooper	1854	1860	do do
William H. H. Gere	1854	1856	do do
W. W. Jerome	1854	1862	do do
D. H. Ainsworth	1854	1856	do do
Calvin Q. Newcombe	1854	1857	do do
William Rumble	1854	1856	do do
Hathaway Hurd	1854	1857	do do
Stephen A. Charles	1854	1857	do do
John Bisgood	1854	1856	do do
Aug. M. Leach	1854	1856	do do
Duncan Campbell	1855	1857	do do
J. H. Ledlie	1855	1857	do do
William Crooks	1855	1858	do do
Thomas M. Sherman	1855	1860	do do
Henry Pomeroy	1855	1858	do do
Thomas Goodsell	1855	1860	do do
William J. Keeler	1856	1859	do do
J. A. Watkins	1856	......	do do
R. D. Shephard	1856	1858	do do
T. W. Spencer	1856	1858	do do

List of Civil Engineers.—Continued.

NAME.	WHEN EMPLOYED.		RANK.
	From	To	
H. H. Bates	1856	1858	First assistant engineer
Peter Hogan	1856	......	do do
Henry Petingale	1856	1859	do do
F. S. K. Russell	1856	......	do do
Charles F. Smith	1856	......	do do
M. Van Brocklin	1856	1858	do do
Howard Thompson	1856	1859	do do
A. McElroy	1856	1859	do do
C. B. Hyde	1856	1858	do do
B. M. Hanks	1856	1861	do do
H. C. Ruggles	1856	1861	do do
John A. Ditto	1856	1858	do do
A. C. Bishop	1856	1858	do do
Norman Seymour	1857	1859	do do
W. L. Campbell	1857	1859	do do
Oscar L. Wetmore	1857	1859	do do
J. A. Lighthall	1857	1859	do do
E. H. Crocker	1860	1862	do do
George Porter	1860	1862	do do

Engineers appointed pursuant to act, chap. 169, *Laws of* 1862.

NAME.	From	To	RANK.
D. C. Jenne	1862	......	Engineer.
J. P. Goodsell	1862	......	do
O. W. Storey	1862	......	do
Wm. B. Cooper	1862	......	Assistant engineer.
M. S. Kimball	1862	......	do do
Ensign Bennett	1862	......	do do
W. W. Jerome	1862	......	do do

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Campbell	illiam Baker	
. Holley	illiam Baker	
. Holley		
. Holley	avid Hudson	George H. Boughton
. Holley	avid Hudson	George H. Boughton
l Jones	ames Hooker	Stephen Clark
l Jones	ames Hooker	
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ngo canal.				
rs.	Average per mile.	iles.	Total cost of repairs.	Total average per mile.
1	----	0	$232,473	$528
1	----	8	234,433	490
1	----	0	254,433	509
1	----	0	221,005	442
1	----	0	180,773	361
1	----	0	344,917	690
1	----	7	372,789	694
1	----	5	478,964	879
1	----	5	432,118	793
1	----	5	406,122	745
1	$201	2	492,144	766
1	214	2	481,774	750
1	177	2	379,769	591
1	159	4	460,686	664
1	160	0	357,828	511
1	195	0	452,559	646
1	155	0	383,076	547
1	164	0	464,329	663
1	195	0	520,452	743
1	190	0	510,355	729
1	194	0	496,424	709
1	215	0	674,777	964
1	267	0	521,122	744
1	280	2	626,950	823
1	307	7	722,259	762
1	375	7	824,533	929
1	394	7	789,082	901
1	507	7	960,265	1,082
1	486	1	781,688	868
1	143	1	616,014	684
1	265	9	752,575	828
1	455	7	878,721	958
1	269	7	630,615	688
1	278	6	356,966	412
1	233	8	360,187	410
1	299	4	342,817	371

he tons

Genesee Vall

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13,65
26,89
41,86
48,31
65,077
73,546
87,615
95,632
98,467
84,674
89,804

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